DT-X7 Series

Software Manual

(Version 1.00)

CASIO Computer Co., Ltd.

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Editorial Record

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1. Overview

The features and specifications described in this reference manual give an overview of the functional detailed specifications of the DT-X7 series handheld terminal.

1.1. Model by Feature

The features integrated in each model of the DT-X7 series are shown below.

Table 1.1

Model	Laser scanner	Linear Imager	Bluetooth Class 1	Bluetooth Class 2	WLAN
DT-X7M10U	No	Yes	Yes	No	No
DT-X7M10E	Yes	No	No	Yes	No
DT-X7M10R	Yes	No	No	Yes	Yes
DT-X7M10E-CN	Yes	No	No	Yes	No
DT-X7M10R-CN	Yes	No	No	Yes	Yes

1.2. Available Options

The following dedicated options are available for DT-X7 series.

Table 1.2

Option	Product	Model no.	Remark
Cradle	USB Cradle	HA-F60IO	With USB interface and the power supply terminals
		HA-F60IO-CN	
	Ethernet Cradle	HA-F62IO	With LAN and USB interface and the power supply terminals
		HA-F62IO-CN	
Dry-cell Battery Case		HA-F22BC	
		HA-F22BC-CN	
Battery	Battery Pack	HA-F20BAT	
		HA-F20BAT-CN	
	Large-capacity Battery Pack	HA-F21LBAT	
		HA-F21LBAT-CN	
Battery charger	Dual Battery Charger	HA-F32DCHG	Maximum 3 chargers can be connected.
		HA-F32DCHG-CN	
	Cradle-type Battery Charger	HA-F30CHG	
		HA-F30CHG-CN	
	Cradle-type Dual Battery Charger	HA-F36DCHG	Maximum 3 chargers can be connected.
		HA-F36DCHG-CN	
AC adaptor	AC adaptor	AD-S15050BE	For HA-F30CHG, HA-F30CHG-CN
		AD-S15050BE-CN	
		AD-S42120BE	For HA-F60IO, HA-F60IO-CN, HA-F62IO, HA-F62IO-CN
		AD-S42120BE-CN	
		AD-S60160BU	For HA-F32DCHG, HA-F32DCHG-CN, HA-F36DCHG, HA-F36DCHG-CN
		AD-S60160BE	
		AD-S60160BE-CN	
Others	Hand Belt	HA-F95HB	

Note:
Refer to DT-X7 Series Hardware Manual (Chapter 1, Table 1.2) for the dedicated options with "-CN" denotation complaint with the Chinese RoHS requirement.

1.3. Application Development Environment

Development platform

- Microsoft Windows 2000 (SP2 or later release)
- Microsoft Windows XP

Development environment

- Visual Studio .NET 2003+WindowsCE Utilities for Visual Studio .NET 2003 Add-on Pack 1
- Visual Studio 2005
- eMbedded Visual C++ 4.0 +SP4

Development environment

- DT-X7 Export SDK

2. Functions

This chapter describes about detailed specifications of the functions implemented in the terminal and the options.

2.1. Basic Functions

2.1.1. WindowsCE Version 5.0

The terminal integrates Microsoft WindowsCE Version 5.0 as its operating system.

Features at a glance

- Easy-to-use user interface
- .NET Compact Framework is supported
- High-speed multitask processing
- Large capacity memory support
- Abundant peripheral equipment
- Easy development thanks to open environment
- PPC application operation with AYGShell

Note:
Microsoft applications such as PocketWORD and PocketEXCEL are not integrated.

Core Modules

Microsoft core modules integrated in the terminal are as follows.

Table. 2.1

Core OS Modules		
Applications and Services Development	.NET Compact Framework	.NET Compact Framework 1.0 Related Matters
	.NET Compact Framework 2.0	.NET Compact Framework 2.0
		.NET Compact Framework 2.0 Strincg Resources
		OS Dependencies for .NET Compact Framework 2.0
	C library and Runtime	String Safe Utility Function
		Complete C runtime
		Standard Input/Output (STDIO)
		Standard Input/Output ASCII (STDIOA)
		Standard Character String Function - ASCII (corestra)
		C++ Runtime Support for Exception Processing and Runtime Type Information
	LDAP (Lightweight Directory Access Protocol) Client	
	Microsoft Foundation Classes (MFC)	
	SOAP Toolkit	Client
	Standard SDK for Windows CE	
	XML	MSXML 3.0
		XML Core Service and Document Object Model (DOM)
		XML HTTP
		XML SAX
		XML Error Character String
		XML Query Language (XQL)
		XML Style Sheet Language Transformation (XSLT)
		XML Minimum Passer
	Active Template Library (ATL)	
	Message Queue (MSMQ)	MSMQ ActiveX Wrapper
		SOAP Reliable Message Protocol (SRMP)
	Component Service (COM and DCOM)	COM
		COM Storage Area
		CoCreateGuid Function for OLE32
		DCOM

Continue.

Applications - End User	ActiveSync	File Sync
	CAB File Installer/Uninstaller	
	FLASH Update Sample Application	
	Remote Desktop Connection	Remote Desktop Protocol (RDP)
		Audio Playback Redirect
		Serial and Parallel Port Redirect
		User Interface Dialog Box
		Cut/Copy/Paste Clipboard Redirect
		File Storage Area Redirect
		Filtered File Storage Area Redirect
Core OS Services	PNP Notification	
	USB Host Support	USB Human Input Device (HID) Class Driver
		USB HID Keyboard and Mouse
		USB HID Keyboard Only
		USB HID Mouse Only
		USB Printer Class Driver
	Kernel Functions	FormatMessage API
		FormatMessage API - System Error Message
		Target Control Support (Shell.exe)
		Fiber API
		Message Queue - Point-To-Point
		Memory Map File
	Serial Port Support	
	Display Support	
	Device Manager	
	Debug tool	Tool Hint API
	Battery Driver	
	Parallel Port Support	
	Notification	UI Base Notification
	Notification LED Support	
	Power Control	Power Control (full)

Continue.

Communication Services and Networking	Server	Simple Network Time Protocol (SNTP)
		SNTP Client With DST
		Web Server (HTTPD)
		Core Server Support
	Network - Local Area Network (LAN)	Native Wi-Fi WLAN STA
		Wired Local Area Network (802.3, 802.5)
		Wireless LAN (802.11) STA - Auto Configuration and 802.1x
	Network - Personal Area Network (PAN)	IrDA
	Network - Wide Area Network (WAN)	Telephony API (TAPI 2.0)
		Unimodem support
		Ethernet Point-To-Point Protocol (PPPoE)
		Dial Up Network (RAS/PPP)
		Standard Modem Support for Dial Up Network
		Auto Dial
		Virtual Private Network
		L2TP / IPSec
		PPTP
	Network Functions	IPSec v4
		NDIS User Mode I/O Driver
		TCP/IP
		IP help API
		TCP/IPv6 support
		Windows Network API/Redirect (SMB/CIFS)
		Winsock Support
		Network Driver Configuration (NDIS)
		Expandable Authentication Protocol
File Systems and Data Store	System Password	
	Database Support	
	File system - Internal	File System Applicable for RAM and ROM
	Duplication of File and Database	Bit Base
	Registry Storage Area	Hive Base Registry
	Compression	
	Storage Area Manager	EDB Database Engine
		FAT File System
		Partition Driver
		Storage Area Manager Control Panel Applet
Fonts	Courier New	Courier New (Subset 1_30)
	Tahoma	Tahoma (Subset 1_07)
	Times New Roman	Times New Roman (Subset 1_30)
	Wingding	

Continue.

International	Local Service	Support for Languages (NLS)
	Input System Manager (IMM)	
Internet Client Services	Pocket Internet Explorer HTML View (WEBVIEW)	
	Internet Explorer 6.0 Component for WindowsCE	Internet Explorer HTML/DHTML API
		Internet Explorer HTML Application
		Internet Explorer Theme Library
		Internet Explorer Plug In Image Decoder API
		Internet Explorer PNG Image Decoder
		Filter and Translation
		Internet Explorer RPC Support
		Internet Explorer TV Style Navigation
		Customizable Font Range
		Fixed Width Layout
		Disable Vertical Scroll Bar and Event
		Direction Tab
		Internet Explorer Browser Control Host
		Basic API Supporting Multilingual Internet Explorer
		Full API Support for Multilingual Internet Explorer
		Character Set/Encode of Options in Registry
		URL Moniker Service
		Windows Internet Service
		P3P (Platform for Privacy Preferences)
		Passport SSI 1.4 Authentication
	Control Panel's [Internet Option]	
Internet Client Services	script	JScript 5.6
		Script Encode (Jscript)
		Script Authoring (Jscript)
		VBScript 5.6
		MsgBox and InputBox Support
		Script Encode (VBScript)
		Script Authoring (VBScript)
	Browser Application	Internet Explorer 6.0 for WindowsCE - Standard Component
		Internet Explorer 6.0 Sample Browser
		TV Style Navigation Component

Continue.

Multimedia Technologies	Audio	Waveform Audio
		Audio Compression Manager
		GSM 6.10 Codec
		MSFilter Codec
	Graphics	DirectDraw
		Imaging
		Static Image Codec Support (Encode and Decode)
		Static Image Encoder
		BMP Encoder
		GIF Encoder
		JPG Encoder
		PNG Encoder
		Static Image Dencoder
		BMP Decoder
		GIF Decoder
		ICO Decoder
		JPG Decoder
		PNG Decoder
		Gradation Support
Security	Microsoft Certificate Registration Tool Sample	
	Local Authentication Subsystem	Password Local Authentication Plug in
	Powerful Encrypting Provider's Encrypting Service (CryptoAPI 1.0)	Diffie-Hellman/DSS Provider
		Certificate (CryptoAPI 2.0)
		Personal Information Exchange Standard (PKCS #12)
		Encryption Messaging (PKCS #7)
	Capability Information Manager	
	Authentication Service (SSPI)	Kerberos
		NTLM
		Schannel (SSL/TLS)
Shell and User Interface	Graphics, Windowing and Event	Minimum GDI Configuration
		Minimum GWES Configuration
		Minimum Window Manager Configuration
		Minimum Input Configuration
	Shell	AYGShell API Set
		Graphic Shell
		Standard Shell
		Command Shell
		Command Processor
		Console Window

Continue.

Shell and User Interface	User interface	Quarter VGA Resource Longitudinal Mode
		Control Panel Applet
		Software Input Panel
		Software Base Input Panel (SIP)
		SIP for Small Screen
		Software Base Input Panel Driver
		Network User Interface
		Shared Control
		Shared Control
		Shared Dialog Support

2.1.2. Displays

Basic Specifications

The QVGA (320 x 240 dots) mode is supported for the terminal. The control panel can be used to switch between the VGA and QVGA modes, and the switching the display mode is initiated when a reset is performed.

Table. 2.2

Display specification		65,536 colors 2-way TFT (16 bpp, Red: 5 bits, Green: 6 bits, Blue: 5 bits)
Display size	X direction	240 dots
	Y direction	320 dots

Backlight brightness

A brightness of the backlight can be changed in the control panel.

- Setting can be made in one of nine grades for power source either when the power is provided by an external power supply (via cradle with AC adaptor connected) or when the power is provided by the installed lithium-ion battery pack.
- Setting can be made in application by using **ExtEscape()API** function.
- If the brightness is set to 1 (minimum), the backlight is turned off.
- The default is 9 (maximum) when an external power source is used or 7 when lithium-ion battery pack is used.

Backlight Auto Dimming

The control panel can be used to set up whether or not the auto dimming function will be used and the waiting time until when dimming begins. Auto dimming is enabled only when the power is provided by the lithium-ion battery pack. It will not function when an external power supply is used.

- If the terminal is left over in idle state - absolutely no key input - while the power is turned on, the backlight will be automatically dimmed to save the power after a given period of time has been elapsed.
- When the terminal is in the auto dimmed state, a press of key will disable the auto dimming function to resume the brightness.
- While the auto dimming function has been set enabled, brightness can be set in one of eight grades. The default is 3.

During the auto dimming function being set enabled, brightness cannot be set any brighter than the brightness illuminated by the backlight. The defaults are “Enable the auto dimming function” and “1 minute” for waiting time period until when the auto dimming function activates.

Auto Backlight OFF

The control panel can be used to set up whether or not the Auto Backlight OFF function will be used and the waiting time until when the Auto Backlight OFF function activates. The Auto Backlight OFF function is operable for both when the power is provided by an external power source and when it is provided by lithium-ion battery pack.

- If the terminal is left over in idle state - absolutely no key - with the power being turned on, the backlight will be automatically turned off to save energy.
- When the terminal is in the Auto Backlight OFF state, a press of key will disable the Auto Backlight OFF function to resume the brightness.
- While the power is being provided by lithium-ion battery pack and both the auto dimming function and the Auto Backlight OFF function have been set enabled, either one of the functions with preset time period shorter than the other will have the priority. The default is “Enable the Auto Backlight OFF function” and “5 minutes for the waiting time” until when the Auto Backlight OFF function activates.

Rotating Display

The rotate display function for rotating the screen at 90, 180 or 270 degree is supported.

- The Common Device Control Library can be used to set up in the application.
- **ChangeDisplaySettingEx() API** function can be used to set up this display rotation feature in application.

See Microsoft Help for details about **ExtEscape()** and **ChangeDisplaySettingEx() API** functions**.**

2.1.3. Keys

Keyboard Layout

The following is the keyboard layout employed in the DT-X7.

Fig. 2.1

Key Assignments

The following are the key codes and functions assignments.

Table. 2.3 Control keys

KEY	Input mode		Operation	Remarks
Fn	----		Specialized key operation (toggle)	Fn mode is released when a key input is made.
CLR	Character input mode	1	Deletes 1 character to the left.	
		A	Deletes 1 character to the left.	
		a	Deletes 1 character to the left.	
		P	Deletes 1 character to the left.	
	Function mode	F	Perform as “ESC operation”.	
↵	Character input mode	1	Perform as “Enter key”.	
		A	Perform as “Enter key”.	
		a	Perform as “Enter key”.	
		P	Perform as “#”.	
	Function mode	F	Perform as “Shift and Enter keys”.	
↑	Character input mode	1	Perform as “Cursor up key”.	
		A	Perform as “Cursor up key”.	
		a	Perform as “Cursor up key”.	
		P	Perform as “Cursor up key”.	
	Function mode	F	Perform as “Shift and TAB keys”.	
↓	Character input mode	1	Perform as “Cursor down key”.	
		A	Perform as “Cursor down key”.	
		a	Perform as “Cursor down key”.	
		P	Perform as “Cursor down key”.	
	Function mode	F	Perform as “TAB key”.	

Table. 2.4 Trigger key

KEY	Input mode		Operation	Remarks
Center trigger	Character input mode	1	Perform as “Trigger key”.	
		A	Perform as “Trigger key”.	
		a	Perform as “Trigger key”.	
		P	Perform as “Enter key”.	
	Function mode	F	Perform as “Trigger key”.	

Table. 2.5 Ten key

KEY	Input mode		Operation	Remarks
0	Character input mode	1	Perform as “0”.	
		A	Perform as “-_/^\&=+$%#* space”.	
		a	Perform as “-_/^\&=+$%#* space”.	
		P	Perform as “0”.	
	Function mode	F	Display or not display SIP.	
1	Character input mode	1	Perform as “1”.	
		A	Perform as “?!()<>[]{}”.	
		a	Perform as “?!()<>[]{}”.	
		P	Perform as “1”.	
	Function mode	F	Turn on or off the backlight.	
2	Character input mode	1	Perform as “2”.	
		A	Perform as “ABC”.	
		a	Perform as “abc”.	
		P	Perform as “2”.	
	Function mode	F	No effect.	
3	Character input mode	1	Perform as “3”.	
		A	Perform as “DEF”.	
		a	Perform as “def”.	
		P	Perform as “3”.	
	Function mode	F	No effect.	
4	Character input mode	1	Perform as “4”.	
		A	Perform as “GHI”.	
		a	Perform as “ghi”.	
		P	Perform as “4”.	
	Function mode	F	Initiate the calibration.	
5	Character input mode	1	Perform as “5”.	
		A	Perform as “JKL”.	
		a	Perform as “jkl”.	
		P	Perform as “5”.	
	Function mode	F	Darken the backlight.	
6	Character input mode	1	Perform as “6”.	
		A	Perform as “MNO”.	
		a	Perform as “mno”.	
		P	Perform as “6”.	
	Function mode	F	Brighten the backlight.	

Continue.

7	Character input mode	1	Perform as “7”.	
		A	Perform as “PQRS”.	
		a	Perform as “pqrs”.	
		P	Perform as “7”.	
	Function mode	F	Initiate application registered in the registry below. [HKEY_LOCAL_MACHINE\HARDWARE\DEVICEMAP\KEYBD] Fn7LaunchPaht:sz (path of the application to be initiated)	
8	Character input mode	1	Perform as “8”.	
		A	Perform as “TUV”.	
		a	Perform as “tuv”.	
		P	Perform as “8”.	
	Function mode	F	Initiate application registered in the registry below. [HKEY_LOCAL_MACHINE\HARDWARE\DEVICEMAP\KEYBD] Fn8LaunchPaht:sz (path of the application to be initiated)	
9	Character input mode	1	Perform as “9”.	
		A	Perform as “WXYZ”.	
		a	Perform as “wxyz”.	
		P	Perform as “9”.	
	Function mode	F	Initiate application registered in the registry below [HKEY_LOCAL_MACHINE\HARDWARE\DEVICEMAP\KEYBD] Fn9LaunchPaht:sz (path of the application to be initiated)	
.	Character input mode	1	Perform as “.”.	
		A	Perform as “@.,””`:;~|”.	
		a	Perform as “@.,””`:;~|”.	
		P	Perform as “*”.	
	Function mode	F	Perform as “-”.	

Key Input Mode Switchover

The A key on the keyboard can be used to change the key input mode.

Indication of Key Input Mode

Key input mode currently specified appears in the task tray. The modes that can be displayed are "L" as Lock, "F" as function, "1" as numeral, "A" as alphabets in uppercase, "a" as alphabets in lowercase, and "P" as telephone.

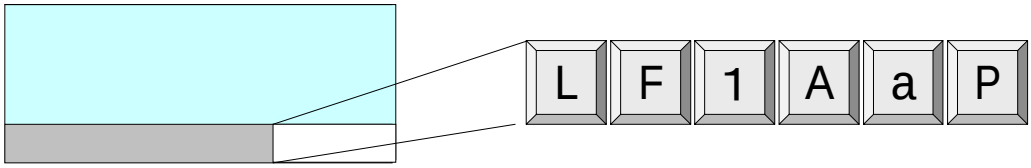


Fig. 2.2

Turnover Key Auto Confirmation

After inputting a turnover key, if the preset time period has been elapsed from the time when the turnover key is released, the turnover character input will be automatically made. The control panel can be used to set up "enable" or "disable" for the auto confirmation on the turnover character input and to set up the time period until when its confirmation is made.

Key Repeat

Continued pressing of any of "0" to "9", " ↑", "←", "→", and " ↓" keys will repeat the key input.

Key Click Sound

The key click sound is generated when a key is pressed. However, it is not generated when the key is released or in mid-course of repeating the key input. The control panel can be used to set up the sound to mute, low or loud.

Enabling or Disabling Fn Key

For keys that perform specialized operations while the key input mode has been set to Function mode, “Enable” or “Disable” can be set on each individual key in the registry below to control the operations.

[HKEY_LOCAL_MACHINE\HARDWARE\DEVICEMAP\KEYBD]

Or, using the **SysSetFnKeyOperation** and **SysSetFnKeyOperation** functions of either Common Device Control Library or Common Device Control Class Library can achieve the same control operation explained above.

Table. 2.6

Key	Setting Value	Meaning
DisableFn9	dword: 0 or 1	Enable or Disable
DisableFn8	dword: 0 or 1	Enable or Disable
DisableFn7	dword: 0 or 1	Enable or Disable
DisableFn6	dword: 0 or 1	Enable or Disable
DisableFn5	dword: 0 or 1	Enable or Disable
DisableFn4	dword: 0 or 1	Enable or Disable
DisableFn3	dword: 0 or 1	Enable or Disable
DisableFn2	dword: 0 or 1	Enable or Disable
DisableFn1	dword: 0 or 1	Enable or Disable
DisableFn0	dword: 0 or 1	Enable or Disable

Function Mode Notification

When the Fn key is pressed, the WM_USER+0x502 message is issued to the application. This enables the application to detect whether the Function mode has been set up enabled or disabled.

Enable or Disable the A Key

The device library can be used to make the setting on “Enable” or “Disable” for switching over the key input mode in application.

A Key Notification

When the A key is pressed, the WM_USER+0x506 message is issued to the application. Using this notification, the application can detect whether the key input mode has been changed.

Permit or Prohibit Key Locks

The device library can be used to permit or prohibit the operations of keys except for the Power and Trigger keys.

User Settable Keys

- Initiating application

The following registry can be used to assign any application to the Fn+7, Fn+8 and Fn+9 keys.

[HKEY_LOCAL_MACHINE\HARDWARE\DEVICEMAP\KEYBD]

Table. 2.7

Key	Setting Value
Fn7LaunchPath	sz: Target application in full path to initiate
Fn8LaunchPath	sz: Target application in full path to initiate
Fn9LaunchPath	sz: Target application in full path to initiate

- Setting key codes

The Common Device Control Library can be used to assign any key code to all the keys except the Fn key. Setting on “Enable” or “Disable” for assigning key code is possible either using the Common Device Control Library or at the control panel.

- The key codes after setting are valid only when the numeral input mode is set enabled.

2.1.4. Audio

Basic Specifications

WAV playback, voice recording and playback are supported.
When headphones are being used, playback from the speaker is halted. Stereo data is converted into mono data and then output. By using the Microsoft **SoftwareMixer** function, output sounds from multiple applications can be mixed and output (in 44.1 KHz, 16-bit stereo mixing).
Voice Recorder is integrated in the terminal as the sound system application to make it possible to perform WAV file streaming playback and local file playback in HTTP.

Playback

Table. 2.8

Sampling frequencies	KHz	8	11.025	12	16	22.05	24	32	44.1	48
	Mono	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Stereo	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Sampling frequencies other than those above are not supported.									
Stereo, Mono	8-bit or 16-bit In reality, mono speakers do not playback in stereo.									

Recording

Table. 2.9

Sampling frequencies	KHz	8	11.025	12	16	22.05	24	32	44.1	48
	Mono	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Sampling frequencies other than those above are not supported.									
Stereo, Mono	8-bit or 16-bit Mono input only via microphone									

Setting Sound Volume

The control panel can be used to set up sound volume in six grades from loud to low and ON/OFF of mute. A sound volume also can be set up using **Win32 API** function in application.

Audio ON/OFF

The audio system can be disabled to save the power. Enable or disable for the audio system in the terminal is controlled using the Common Device Control Library in application.

2.1.5. Buzzer

Basic Specifications

The buzzer can be used to output various sounds such as scanning confirmation, alarm, warning and any other available sounds.
The sounds have the following four attributes and default values.

Table. 2.10

	Frequency (Hz)	Time (millisecond)	Individual Mute	Attribute
Alarm sound	3500	150	ON or OFF	B_ALARM
Warning sound	3000	100	ON or OFF	B_WARNING
Scan end sound	3300	75	ON or OFF	B_SCANEND
User designated sound	--	--	ON or OFF	B_USERDEF

Setting Volume

The control panel can be used to set up volume in three grades from loud, medium and low and ON/OFF of mute. Setting the volume is also possible using the Common Device Control Library in application.

2.1.6. Memory Management

RAM

The integrated RAM has a total capacity of 64 Mbytes and is used for the following purposes.

- Program memory to be used by the OS and programs.
- Object store used for temporary file saving, etc.
- Other program and OS resident areas beyond the control by the OS
- Driver work area

The user can make unrestricted use with the object store, but data stored in it may be lost due to battery exhaustion, etc. To avoid such incident it should be used just as a temporary storage area, and use FlashDisk to store important data files.

Table. 2.11 Initial memory status

Memory	Initial Status	
Program memory capacity	Total capacity; 27.6 MB	6.5 MB used
Object store capacity	Total capacity; 13.7 MB	0.3 MB used

2.1.7. LED

Basic Specifications

There are two LEDs integrated in the terminal, one for the user notification on the right and the other for charging the battery complete on the left.

Table. 2.12

LED	Color	Description
Right-side LED	Red	User notification (alarm), scanning a bar code
	Green	Scanning a bar code
	Blue	Connection established via Bluetooth
	Orange	Connection established via WLAN
	Purple	None
	Sky blue	None
Left-side LED	Red	Charging battery pack
	Green	Charging battery pack complete

Notes:

- The user notification LED can be used to indicate various notifications by the OS and other notifications defined by the user.
- All colors available in the LEDs are indicated by using the Common Device Control Library.
- The charging battery complete LED cannot be controlled for its ON/OFF state with software.

User Notification (Alarm)

This indication mode is used for alarm notification, etc. The LED can be lit for a specific time using **CeSetUserNotification()API** function.

Table. 2.13 Specifications

Operating mode	Specification
Blink interval	ON for 1 second in red, OFF for 2 seconds
Continuous ON time	ON for 30 minutes (OFF when VDET is detected.)

Note:

Indication for scanning a bar code has the priority over other indications.

Scanning

This is used for notification of a scanning result which is controlled by use of the Common Device Control Library.

Table. 2.14 Specifications

Operating mode	Specification	Attribute
Scanning complete	ON in green for a specified period of time, then OFF.	L_SCANOK
Scanning in error	ON in red for a specified period of time, then OFF.	L_SCANERR

Bluetooth Connection Status

This is used for notification of Bluetooth connection establishment status which is controlled by use of the Common Device Control Library.

Table. 2.15 Specifications

Operation mode	Specification	Attribute
Bluetooth established	ON in blue for 1 second, OFF for 2 seconds	L_BT

Note:
Indication for scanning a bar code has the priority over other indications.

WLAN Connection Status

This is used for notification of WLAN connection establishment status which is controlled by use of the Common Device Control Library.

Table. 2.16 Light up specifications

Operation mode	Specification	Attribute
WLAN established	ON in orange for 1 second, OFF for 2 seconds	L_WLAN

Note:
Indication for scanning a bar code has the priority over other indications.

User Definition

This indication mode is used for other notifications freely defined by the user. The ON/OFF state can be controlled by use of the Common Device Control Library.

Table. 2.17 Specifications

Operation mode	Specification
User definition	Color selection from green, blue, orange, purple or sky blue.
	Programmable for ON and OFF time periods
Continuous ON time period	30 minutes (OFF when VDET is detected)

Note:
Indication for scanning a bar code has the priority over other indications.

2.1.8. Vibrator

Basic Specifications

The vibrator can be set up for five different occasions.

Table. 2.18

Occasion	Vibration Pattern	Setting	Default
Alarm	Default	ON or OFF	OFF
Warning	Default	ON or OFF	OFF
Barcode scan complete	Default	ON or OFF	OFF
Wireless incoming signal	Default	ON or OFF	OFF
User definition	User	ON or OFF	OFF

Vibration Interval

The vibration interval can be set in two different patterns, the default setting and a user defined setting.

Table. 2.19

Pattern	Vibration Interval	Remarks
Default	"ON for 1 second, OFF for 1 second" x [times]	Maximum no. of times; 20
User definition	"Specified ON period, Specified OFF period" x [times] Setting range; 1/16 seconds to 16 seconds for ON period, 1/16 seconds to 1 second for OFF period	Maximum no. of times; 20

The Common Device Control Library can be used to control ON/OFF state for each occasion of the vibration and the vibration interval in user definition.

2.2. Scanner

2.2.1. Basic Specifications

The following industrial standard bar code symbologies are supported by the laser scanner.

Table. 2.20 Supported symbologies

Symbology	Check Digit Sum	Min Digits	Max Digits
EAN, JAN,UPC-A/B	Enable or Disable	8 (fixed)	13 (fixed)
EAN, JAN,UPC-A/B Addon	Enable or Disable	10 (fixed)	18 (fixed)
UPC-E	Enable or Disable	7 (fixed)	7 (fixed)
UPC-E Addon	Enable or Disable	9 (fixed)	12 (fixed)
Code39	Enable or Disable	2 (note 3)	52
NW-7	--	2 (note 4)	63
Interleaved 2of5	Enable or Disable	4 (note 5)	94
Industrial 2of5	Enable or Disable	2	67
Code93	Enable or Disable	1	70
Code128	Enable or Disable	1	98
MSI	Enable or Disable (note 1)	1	57
IATA	Enable or Disable (note 2)	1 (note 6)	65 (note 6)
RSS-14*	Enable	14 (fixed)	14 (fixed)
RSS Limited*	Enable	14 (fixed)	14 (fixed)
RSS Expanded*	Enable	1	74 (note 7)
RSS-14 Stacked*	Enable	14 (fixed)	14 (fixed)
RSS Expanded Stacked*	Enable	1	74 (note 7)

Table. 2.21 Supported symbologies (DT-X7M10U)

Symbology	Check Digit Sum	Min Digits	Max Digits
EAN, JAN,UPC-A/B	Disable	8 (fixed)	13 (fixed)
EAN, JAN,UPC-A/B Addon	Disable	10 (fixed)	18 (fixed)
UPC-E	Disable	7 (fixed)	7 (fixed)
UPC-E Addon	Disable	9 (fixed)	12 (fixed)
Code39	Enable or Disable	2 (note 3)	50
NW-7	Enable or Disable	2 (note 4)	50
Interleaved 2of5	Enable or Disable	4 (note 5)	50
Industrial 2of5	Enable or Disable	2	50
Code93	Enable or Disable	1	50
Code128	Disable	1	50
MSI	Enable or Disable (note 1)	1	50
IATA	Enable or Disable (note 2)	1 (note 6)	50
RSS-14*	Enable	14 (fixed)	14 (fixed)
RSS Limited*	Enable	14 (fixed)	14 (fixed)
RSS Expanded*	Enable	1	74 (note 7, 8)
RSS-14 Stacked*	Enable	14 (fixed)	14 (fixed)
RSS Expanded Stacked*	Enable	1	74 (note 7, 8)

*; RSS was renamed as GS1 DataBar in February 2007.

Notes:

1. MSI check digit
   One of the three following MSI check digit calculation methods can be selected.
   1 digit, mod10
   2 digit, mod10 and mode11
   2 digit, mod10 and mod10
2. IATA check digit
   One of the three following IATA check digit calculation methods can be selected.
   Calculate number other than end 1 digit
   Calculate coupon number and numeric value segment
   Calculate numeric value segment
3. Minimum digit on Code39 symbology
   The no. of minimum digits can be set to one digit only when scanning on Code39 symbology is enabled.
4. Minimum digit on NW-7 symbology
   The no. of minimum digits can be set to one digit only when scanning on NW-7 symbology is enabled.
5. Minimum digit on Interleaved 2of5
   The no. of minimum digits can be set to two digits only when scanning on Interleaved 2of5 symbology is enabled.
6. Minimum and maximum digits on IATA symbology
   The no. of minimum digits can be set to 15 digits or 17 digits for the maximum only when the IATA check digit calculation is set to “Coupon number and Calculate data segment” or “Calculate just data segment”.
7. Maximum digit on RSS Expanded and RSS Expanded Stacked symbologies
   The maximum digit count for just numeric data is 74 digits. The maximum digit count for just alphabet data is 41 digits.
8. The maximum digits for each symbology in Table 2.22 are based on the optimum conditions of each element such as the bar code print quality, resolution, PCS, brightness surrounded, and distance between the terminal and the bar code. Depending on these conditions, even if one of the maximum digits in the table is set to a bar code symbology, an individual bar code of that symbology may not be scanned.
9. If IATA symbology valid minimum digit is set to one digit, the chance of misreading will increase. If there is no need to scan a bar code of the symbology with its minimum digit one, do not change the default setting. The default is set to 4.

Check Digit Calculation

A bar code value is calculated in accordance with method, and then the calculation result and the check character at a specific position are compared. If they match, the scanning data is deemed correct. The calculation method differs according to each symbology.

Readable Digits

The actual readable digit on a bard code differs depending on the resolution and the scanning distance between the terminal and the bar code.

2.2.2. Scanning Method

The laser scanner has “scanning state” (emits laser beam to read a bar code) and “standby state” (scanning is halted and in standby state). These two states are controlled to start scanning bar code and stop the scanning.

Table. 2.22 Scanning methods

Scan method	Description	Conditions for scanning to end	Timeout Yes/No
Single scan	Press the trigger key to start scanning. Scanning is stopped when either scanning is succeeded or one of the scan end conditions is met.	Timeout time has elapsed. **OBRClose** function is called.	Yes
Continuous scan (controlled with trigger key)	Press the trigger key to start scanning, and scanning will continue as long as the trigger key is pressed down. Scanning will stop when either scanning is completed for just preset no. of times for scanning or one of the scan end conditions is met.	Timeout time has elapsed after scanning a bar code. Scanning for the number of preset times is complete. The trigger key is released. **OBRClose** function is called.	Yes
Continuous scanning (controlled by program)	Scanner library functions are used to start and stop scanning. The previous scanning data and scanning data overlapped with other scanning data will be disregarded. Also, to save the power during scanning, emitting laser beam will be turned off between laser emissions. (see note)	Timeout time has elapsed after scanning the precious scanning. Scanning end function is called while scanning continues. **OBRClose** function is called.	Yes

Note:
The scanning method set as default is with “Continuous scanning (controlled with trigger key)” and “No. of preset times for continuous scanning = 1”.

Step Scan

This method is for scanning a designated number of bar codes. Once scanning for the designated number of bar codes has been completed, the scanner will close and not scan again until reopened. Also, the same bar codes that have been scanned previously cannot be scanned again.

2.2.3. Scanning Parameters

Conditions that allow scanning a symbology in specific modes can be set for each readable symbology.

Readable Symbology

Bar code symbologies that are enabled or disabled for scanning can be specified. If only specific symbologies are to be scanned, set “Enable” for scanning on these symbologies only and “Disable” on the other symbologies. This will reduce decode processing time and lower the error rate. The default is “Enable scanning on all the symbologies”.

Readable Digits

The no. of readable digits can be set for each symbology. If only specific no. of digits is to be scanned, specify it for each readable symbology. This will reduce decode processing time and lower the error rate.

Enable or Disable Check Digit

Check digit can be set to “Enable” or “Disable” for each readable symbology. Setting the check digit will lower the error rate.

Table. 2.23

Symbology	Check Digit Calculation	Default
EAN, JAN,UPC-A/B	Enable or Disable	Enable
EAN, JAN,UPC-A/B Addon	Enable or Disable	Enable
UPC-E	Enable or Disable	Enable
UPC-E Addon	Enable or Disable	Enable
Code39	Enable or Disable	Disable
NW-7	Enable or Disable	Disable
Interleaved 2of5	Enable or Disable	Enable
Industrial 2of5	Enable or Disable	Enable
Code93	Enable or Disable	Enable
Code128	Enable or Disable	Enable
MSI	Enable or Disable	Enable
IATA	Enable or Disable	Disable
RSS-14	Enable	Enable
RSS Limited	Enable	Enable
RSS Expanded	Enable	Enable
RSS-14 Stacked	Enable	Enable
RSS Expanded Stacked	Enable	Enable

Validation

Validation is carried out for a specified number of times in the range of 1 to 9 (Default = 3) to check if scanned data is valid, and then the data is output only if it is valid. The number of validations can be set either at the control panel or using the Common Device Control Library.

No. of Scanning Times

In “Continuous Scanning” mode, scanning continues for the preset number of scanning times in the range of 1 to 9 (Default = 1) and then it will stop in waiting mode. The number of times for scanning can be set either at the control panel or using the Common Device Control Library.

Scanning Period

Valid time period of scanning in the range of 1 to 9 (Default = 3) seconds after the trigger key was pressed down can be set either at the control panel or using the Common Device Control Library. After the preset time has elapsed, the scanner will go into standby mode waiting for the trigger key to be pressed down again.

Double Scanning Prevention

This is used to prevent double scanning of the same bar code during the “Continuous Scanning” mode is being set. Scanning the same bar code again will be prohibited as long as the scanning continues for the preset number of times. However, it can be scanned when a new “Continuous Scanning” starts.

2.2.4. Scanning Output Format

Formats for outputting results of scanned bar codes can be set.

Table. 2.24 Output Formats

Symbology	Standard	No. of digits	Output Format	Remark
WPC	JAN-13	13	FFMMMMMNNNNNCT	T : Termination code See Table 2.26 for meaning of the notations. Excluding UPC-B, check digit (mod 10) calculation is always performed
	EAN-13	13	FFMMMMMNNNNNCT	
	JAN-8	8	FFMMMNCT	
	EAN-8	8	FFMMMNCT	
	JAN-13 addon+2	15	FFMMMMMNNNNNCAAT	
	EAN-13 addon+2	15	FFMMMMMNNNNNCAAT	
	JAN-13 addon+5	18	FFMMMMMNNNNNCAAAAAT	
	EAN-13 addon+5	18	FFMMMMMNNNNNCAAAAAT	
	JAN-8 addon+2	10	FFMMMMNCAAT	
	EAN-8 addon+2	10	FFMMMMNCAAT	
	JAN-8 addon+5	13	FFMMMMNCAAAAAT	
	EAN-8 addon+5	13	FFMMMMNCAAAAAT	
	UPC-A	12	0SMMMMMNNNNNCT	
	UPC-B	12	0SMMMMMNNNNNNT	
	UPC-A addon+2	14	0SMMMMMNNNNNCAAT	
	UPC-B addon+2	14	0SMMMMMNNNNNNAAT (note 2)	
	UPC-A addon+5	17	0SMMMMMNNNNNCAAAAAT	
	UPC-B addon+5	17	0SMMMMMNNNNNNAAAAAT (note 2)	
	UPC-A	12	SMMMMMNNNNNCT	
	UPC-A addon+2	14	SMMMMMNNNNNCAAT	
	UPC-A addon+5	17	SMMMMMNNNNNCAAAAAT	
	JAN-13	14	0FFMMMMMNNNNNCT	GTIN
	EAN-13	14	0FFMMMMMNNNNNCT	GTIN
	JAN-8	14	0000000FFMMMNCT	GTIN
	EAN-8	14	0000000FFMMMNCT	GTIN

Continue.

UPC-E (note 1)	UPC-A	14	00SMMMMMNNNNNCT	GTIN
	UPC-E	(7),8	0MMNNNMCT	Last M: 0 to 2
		(7),8	0MMMNN3CT	
		(7),8	0MMMMN4CT	
		(7),8	0MMMMMNCT	Last N: 5 to 9
		(6),7	MMNNNMCT	Last M: 0 to 2
		(6),7	MMMNN3CT	
		(6),7	MMMMN4CT	
		(6),7	MMMMMNCT	Last N: 5 to 9
	UPC-E	14	0000000MMNNNMCT	GTIN Last M: 0 to 2
		14	0000000MMMNN3CT	GTIN
		14	0000000MMMMN4CT	GTIN
		14	0000000MMMMMNCT	GTIN Last N: 5 to 9
	UPC-E addon+2	(9),10	0MMNNNMCAAT	Last M: 0 to 2
		(9),10	0MMMNN3CAAT	
		(9),10	0MMMMN4CAAT	
		(9),10	0MMMMMNCAAT	Last N: 5 to 9
		(8),9	MMNNNMCAAT	Last M: 0 to 2
		(8),9	MMMNN3CAAT	
		(8),9	MMMMN4CAAT	
		(8),9	MMMMMNCAAT	Last N: 5 to 9
	UPC-E addon+5	(12),13	0MMNNNMCAAAAAT	Last M: 0 to 2
		(12),13	0MMMNN3CAAAAAT	
		(12),13	0MMMMN4CAAAAAT	
		(12),13	0MMMMMNCAAAAAT	Last N: 5 to 9
		(11),12	MMNNNMCAAAAAT	Last M: 0 to 2
		(11),12	MMMNN3CAAAAAT	
		(11),12	MMMMN4CAAAAAT	
		(11),12	MMMMMNCAAAAAT	Last N: 5 to 9
Code39		3 to Max	SBBB -------- BBCST	See Table 2.27 for meaning of the notations
		3 to Max	SAAA ------- AACST	
		1 to Max	BBB ------- BBCT	
		1 to Max	AAA ------ AACT	
NW-7		3 to Max	SDDD ------- DDDST	See Table 2.28 for meaning of the notations
		1 to Max	DDD ------- DDDT	
Interleaved 2of5		2 to Max	DDD ------- DDDCT	See Table 2.29 for meaning of the notations Only even number digits used for scanning readable digits.
Industrial 2of5		2 to Max	DDD ------ DDDCT	See Table 2.30 for meaning of the notations Only even number digits used for scanning readable digits.

Continue.

Code93		1 to Max	AAA ------ AAAT	See Table 2.31 for meaning of the notations
Code128	Code128	1 to Max	AAA ------ AAAT	
		1 to Max	SBBB ----- BBCST	See Table 2.32 for meaning of the notations
	EAN128	1 to Max	AAA ------- AAAT	
		1 to Max	SBBB ------ BBCST	See Table 2.33 for meaning of the notations.
		1 to Max	FAAA ------ AAAT	
		1to Max	GAAA ------ AAAT	
MSI		1 to Max	DDD ------ DDCCT	See Table 2.34 for meaning of the notations.
IATA		1 to Max	DDDDDDDDDD --------- CT	See Table 2.35 for meaning of the notations
			PADDDDDDDDDDDDDDCT	
RSS-14		16	01DDDDDDDDDDDDCT	See Table 2.36 for meaning of the notations.
		14	DDDDDDDDDDDDCT	
RSS Limited		16	01DDDDDDDDDDDDCT	See Table 2.37 for meaning of the notations.
		14	DDDDDDDDDDDDCT	
RSS Expanded		1 to74	DD ---- DDDT	See Table 2.38 for meaning of the notations.
		1 to 41	AA ---- AAAT	
RSS-14 Stacked		16	01DDDDDDDDDDDDCT	See Table 2.36 for meaning of the notations.
		14	DDDDDDDDDDDDCT	
RSS Expanded Stacked		1 to74	DD ---- DDDT	See Table 2.38 for meaning of the notations.
		1 to 41	AA ---- AAAT	

Notes:
"C" will not be appended to the output if the no. of scanning digits described in parentheses in the table above is applicable.

Table. 2.25 WPC symbology

F	Country flag
M	Manufacturer code
N	Product code
S	Number system character
A	Addon data
T	Termination code
C	Check digit (mod 10)

Table. 2.26 Code39 symbology

A	ASCII conversion post data
B	ASCII conversion pre data
C	Check digit (mod 43). Becomes data if there is no check digit
S	Start and stop characters

Table. 2.27 NW7 symbology

S	Start and stop characters (any of a, b, c, d)
D	Data
C	Check digit (mod 16). Becomes data if there is no check digit

Table. 2.28 Interleaved 2of5 symbology

D	Data
C	Check digit (mod 10). Becomes data if there is no check digit

Table. 2.29 Industrial 2of5 symbology

D	Data
C	Check digit (mod 10). Becomes data if there is no check digit

Table. 2.30 Code39 symbology

A	ASCII conversion post data
B	ASCII conversion pre data
C	Check digit (mod 47). Becomes data if there is no check digit
S	Start and stop characters

Table. 2.31 Code128 symbology

A	ASCII conversion post data
B	ASCII conversion pre data

Table. 2.32 EAN128 symbology

C	Check digit (mod 47)
S	Start and stop characters
F	Code ID (only “]C1”, EAN128)
G	GS (only 1Dh, EAN128)

Table. 2.33 MSI symbology

D	Data
C	Check digit (mod 10, mod 11). Becomes data when there is no check digit (note)

Table. 2.34 IATA symbology

D	Data
C	Check digit (IATA). Becomes data when there is no check digit
P	Coupon No
A	Airline No

Table. 2.35 RSS-14 symbology

D	Numeric data
C	Check digit (mod 10)

Table. 2.36 RSS Limited symbology

D	Numeric data
C	Check digit (mod 10)

Table. 2.37 RSS Expanded symbology

D	Numeric data
A	Alphabet data

Termination Codes

Select one of the following five termination codes to attach to the end of decoded data.

- CR
- LF
- CR+LF
- TAB
- No termination code (Default)

Output Buffer

The scanner scans a bar code and outputs the scanned data using one of the following methods described in the table below.

Table. 2.38

Output Method	Description
OBR buffer output (see note)	- Scanned data is output to memory in the laser scanner driver. - Scanned data already output to the memory can be captured using the Common Device Control Library.
Key message output	- Scanned data can be output with the window message to the specified window handle. - The window handle is specified using the Common Device Control Library.
Clipboard output	- Scanned result is copied to the clipboard and then output to the edit control focused by caret.
Keyboard output	- Scanned result is output as a keyboard event to the edit control focused by caret.

Note:

OBR buffer Output

When a barcode is scanned, the decoded data including the symbology and data size are stored to the memory in the laser scanner driver. This output method has the following features.

- Can capture the bar code symbology and data size.
- Can capture the data at any timing the user prefers.
- One piece of data can be a maximum of 98 characters long and up to nine labels can be stored in the memory. If any new data scanned after exceeding over nine labels stored already in the memory will be disregarded.

Conditions for Terminating Scanning

Scanning will be terminated when any of the following conditions is met.

- Scanning is succeeded.
- Preset timeout period has elapsed.
- OBR buffer becomes a full.
- An abnormal condition is detected in the scan module.

Scan Completion Notification

When scanning is completed, a notification is issued to the application using one of the methods described in the table below. Each notification method can be set to “Enable” or “Disable”. The default is “Notification with window message”.

Table. 2.39

Method	Description
Window message	A window message is issued to the specified window handle. Also, the conditions for scanning completion can be fetched by referring to wParam parameter of the window message.
Event	A predefined event in the registry is issued. The conditions of scanning completion can be fetched using the Common Device Control Library.
None	No message or event is issued when scanning is complete.

Event Name

The predefined event name which is issued for event notification can be changed in the registry described below. If there is no value set in the registry, the default event name, OBRScanningEvent, will be used.

[HKEY_LOCAL_MACHINE\Drivers\CASIO\Laser]

Table. 2.40

Key Name	Setting Value
EventName	sz: Any name

Capturing Event Factors

When a notification for scanning completion is issued with “Event”, factors which made the scanning succeeded are automatically recorded. The recorded factors are also fetched using the Common Device Control Library.

Setting Specific Operation Unique to Code128 Symbology

The terminal supports specific operations unique to the Code128 symbology that are initiated when certain conditions are met at a time of scanning a symbol of the Code128 symbology.

Table. 2.41

Symbology	Condition	Performance
Code128	At time of scanning a symbol of Code128 that includes the FNC2 function character.	Scanned symbol data including the FNC2 function character is temporarily stored in the scanner until when a next symbol is scanned. The stored data is automatically added at the forefront of the subsequent scanned symbol data to be output. (See note below.)
	At time of scanning a symbol of Code128 symbology that includes the FNC4 function character(s).	The value "128" is added automatically to a data character in ASCII of scanned symbol located next to the FNC4 function character. If two sequentially laid FNC4 function characters in a symbol are scanned, either other group of two sequentially laid FNC4 function characters within the same symbol are read, or "128" is added automatically to each subsequent ASCII character data laid next to the two FNC4 function characters until the last.

Notes:

The size of combined symbol data including the FNC2 function character is limited to 98 characters (maximum). If the size of any combined symbol data exceeds the maximum number of characters, the previous combined symbol data that have been scanned right before the exceeded combined symbol data are output.

2.2.5. Scan Result Notification

When scanning a bar code is completed, a notification about the scanning result can be indicated to the user with either LED or buzzer or vibration. Each indication method can be set to “Enable” or “Disable”.

Table. 2.42

Indication method	Setting	When succeeded	When failed (see note 1)	Scanning interrupted (Trigger key released)	OBR buffer full (see note 2)	Default
LED	Mode 1	ON in green	None	None	ON in green	Mode 1
	Mode 2	ON in green	ON in red	None	ON in green	
	Mode 3 (disable)	None	None	None	None	
Buzzer	Enable	Scan completion sound	None	None	Warning sound	Enable
	Disable	None	None	None	None	
Vibrator	Enable	Vibrates	None	None	None	Disable
	Disable	None	None	None	None	

Notes:

1. Scanning will fail when one of the errors occurs.
   - A bar code with the number of digits which exceeds over the specified range is scanned.
   - Check digit calculation error occurs.
   - Full ASCII conversion error occurs in scanning bar code of Code39 symbology or Code128 symbology.
2. During the “OBR buffer output” method has been set as scanned data output method, this condition occurs if scanning takes place while nine labels worth of data are stored already in the memory buffer.

2.2.6. Expanded Features

Control on Laser Emission Width

If the laser emits on bar codes located near each other, scanning may fail. By narrowing the laser beam emission width, scanning can be focused onto only one bar code, not onto the other one located near by. The laser beam emission width can be set to one of the following four modes. The Common Device Control Library can be used to set it. The default is “No control on laser beam emission width”.

- No control on laser beam emission width
- Wide
- Normal
- Narrow

The setting values are stored in EEPROM, and read out at time of resetting. Laser calibration (see note below) can be used to adjust each setting value for the laser beam emission width. The setting values adjusted must be registered in the registry. The values in the registry will have the priority.

Note:
Each scanner module integrated in the terminal has an individual performance difference from others. To minimize this difference, the laser calibration must be executed on each terminal using a dedicated reference bar code.

Laser Focus

If scanning takes place with the laser beam emitted onto multiple bar codes located near each other, it is difficult to distinguish by the user which bar code was scanned. In such the condition, if a laser beam can be emitted focusing only one the user wishes to scan and a notification about which bar code is scanned is issued to the user, the scanning can be succeeded without having any difficulty. The Common Device Control Library can be used to set “Enable” or “Disable” for this laser focus function. The default is “Disable the laser focus function”.

Power ON with Trigger Key

If the Trigger key has been set to “Enable turning on the power with Trigger key”, the power can be turned on (while the power was being turned off) when it is pressed. This function allows the user to achieve multiple operations with only one action, turn on the power → press the Trigger key → scan a bar code. This feature is a perfect idea when the user wishes to resume scanning after the power has been turned off. The default is “Disable turning on the power with Trigger key”.

Setting Trigger Key

Enter key, 4-way cursor key, side trigger key, grip trigger key (option) and center trigger key on the front of the terminal can be set as the Trigger key. The default is only both left and right side keys are set as the Trigger key.

Noise Filter

If the background of a bar code is white color, a noise tends to be generated easily during scanning causing the error rate to increase. To reduce such the noise, the noise filter function is available with the terminal. Two methods are available to set the function operable.

Table. 2.43

Filter	Description	Merit	Demerit
Software noise filter	A software process removes noise. In determining the blank at the leading edge of the barcode, if there is a bar width smaller than a certain value, it will be bonded to the fore and aft data, the noise eliminated and the determination made. Also, the time from scan start to “enable” of software filter can be set.	Effective when scanning leading edge blank of bar code using laser module noted for easily picking up noise.	If initial bar is extremely thin, it will be determined as noise and eliminated, which may mean that the bar code cannot be scanned.
	Setting range: 1 to 8 seconds, Default : 3 seconds		
ASIC noise filter	Removes noise using the ASIC process. If there is a bar width smaller than a certain value, it will be bonded to the fore and aft data, and the noise eliminated. This is normally effective in preventing DMA overrun.	---	---

Notes:

- Only the ASIC noise filter has been set enabled as default.
- The software noise filter is not required by the DT-X7 series.

Setting Gain

The laser module gain setting can be switched. Switching this setting enhances scanning performance particularly for a bar code located far away from the terminal and a bar code printed in high-resolution.

Operation Setting Information File

The various setting values can be stored in a file and resumed. The setting file storage location and name are “\FlashDisk\System Settings\OBRDRV.ini”. If there is no such the setting file, the default values are used to initiate the scanning.

Dual Decoder System

The dual decoder system initially decodes a scanned bar code data using the standard decoder, but if decoding fails, it will use the following additional decoder to scan the same bar code. This dual decoders system supports the bar code symbologies listed below.

- Code39
- Code128
- EAN

With the decoding system used for the previous CASIO handheld terminals, decoding is processed with a mean value of one module adding bar thickness of each black bar and white bar for one character when performing binaryzation or quardruplzation of bar thickness. However, this method does not accurately decode a bar code if it is formed with unbalanced bar thickness between white bars and black bars.
The dual decoder system can solve it by calculating separately each mean value of black bars and white bars for such a bar code with unbalanced thickness of white and black bars by changing the threshold level of decoding.

Customizing the Decoder

According to the scan environment and the bar code printed material's quality, the decoder can be customized to efficiently improve scanning performance. First, to maintain scanning performance with the normal decoding logic, perform decoding using with the decoder and if it does not succeed the decoding, customize it so that the decoding can be performed for a better scanning performance.

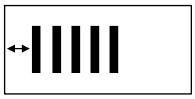
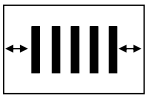
Table. 2.44 Customizing the elements

Element	Description
Change margin of the right/left threshold values	Used to change the threshold values of right and left side marginal spaces which are allocated for areas colored in white on the left and right sides of a bar code.
Change of compensation values of the thickness/thinness of a bar.	Used to thicken or thin each bar of bar code for a specified value and then decode it.
	Value for thickening or thinning each bar can be changed.

Changing the threshold values for Right and Left margins

When a bar code is printed inside of quadrangle, scanning may not be possible because there is not enough left and/or right marginal space. By making change on the right/left marginal threshold values, scanning a bar code becomes possible. See the table below.

Table. 2.45

When the left marginal space is narrow.	
When the right marginal space is narrow.	
When both right and left marginal spaces are narrow.	

Changing the thickness of bars

If bars of a bar code are printed thick because blurring or scratchy white bars (spaces between two bars) are printed thinly, the bar ratio will not be correct causing scanning incorrectly. By adjusting the thickness of these bars makes scanning the bar code possible. This method is applicable if all bars of a bar code are either too thick or too thin because the method is applied to the whole of a bar code.

2.2.7. Power Control

In order to save the power, the power will not be supplied to the laser scan module and the ASIC module for laser beam control during the laser beam is not irradiating. It will be supplied to these modules when the laser beam is to be irradiated, and turned off again when the laser beam is not irradiated.

2.3. USB

2.3.1. Basic Specifications

Switching USB

- Switches between USB Client (USB Function) and USB Host.
- Switching between USB Client (USB Function) and USB Host is executed by a signal from the cradle. This cannot be performed in application.
- Switching is not possible while a USB device is connected to the cradle and the terminal is recognizing the USB device. Switching can be performed once the USB device is disconnected.
- **USBIsHost API** function can be used to capture the current USB Client (USB Function)/Host status.

USB Client (USB Function)

- Supports the USB 1.1 full speed.
- Communicates with "wceusbsh.dll" on PC side.
- Communication with PC can be established using ActiveSync.
- Communication with PC can be established using **FLCE/LMWIN** (ActiveSync must be disabled.)

USB Host

- Supports the USB 1.1 full speed.
- Supports USB-MODEM/USB-LAN.
- USB device is disconnected when the terminal is suspended.
- Does not support WakeOn Ring/WakeOn LAN.
- Does not support communication via USB HUB.

USB-MODEM

- Supports the USB Communication Class (CDC: ACM).
- Communication with modem via virtual COM port can be established.
- Dial up via USB modem can be possible by selecting USB modem at the setting of connection under WindowsCE.

USB-LAN

- Supports "SOHO-USBNET/100+".
- Can be connected to network via the TCP/IP protocol.

2.3.2. COM Port

COM ports used with USB are as follows.

Table. 2.46

USB Function	COM2
USB-MODEM	COM5

2.3.3. Product ID

USB product ID is as follows.

Table. 2.47

USB Client	0x3303

2.4. IrDA

2.4.1. Communication Speeds

The IrDA supports the following physical communication speeds.

Table. 2.48

Via	SIR	FIR
IrDA protocol	9600, 19.2K, 38.4K, 57.6K, 115.2K bps	4M bps
RAW IR	9600, 19.2K, 38.4K, 57.6K, 115.2K bps	-

Notes:

- A speed of communication via IrDA protocol is automatically determined by negotiation with the partner device.
- The maximum communication speed supported commonly by both parties (the terminal and the partner device) will be determined as communication speed.
- Communication speed cannot be set in application.

2.4.2. COM Port

COM ports used with IrDA are as follows.

Table. 2.49

IrDA protocol	COM3
RAW IR	COM4

2.5. Bluetooth

2.5.1. Basic Functions

Master
Establishes a connection with Bluetooth equipment in slave mode waiting for connection with the master.

Slave
Becomes in waiting mode for communication initiated by the master.

Security, Encryption
Performs security (PassKey exchange) and encryption as laid down in the Bluetooth standard.

AFH
Automatically or manually limits and controls radio wave frequency band to be employed in Bluetooth communication.

Fast Connection
This is to convert radio frequency for Bluetooth communication into transmission pattern which allows connection establishment quickly.

WakeOn Bluetooth
This function establishes communication with a Bluetooth equipment that is being in suspended mode and resumes the communication operation with that partner Bluetooth equipment.

2.5.2. Communication Profiles

The following are supported Bluetooth profiles.

Table. 2.50

Function	Purpose
GAP (General Accessible Profile)	Used in the substructure segment of Bluetooth communications such as device discovery, link establishment and security.
SDP (Service Discovery Profile)	Used to search for currently usable services provided by the partner Bluetooth equipment.
Serial Profile (Client)	In Bluetooth serial communication, this is used for connection to other Bluetooth equipment.
Serial Profile (Server)	In Bluetooth serial communication, this is used for acceptance of connection request from other Bluetooth equipment.
DUN (Dial-Up Network)	This is used in dial up communication via Bluetooth mobile phone.
PAN (Personal Area Network)	This is used in network communication via Bluetooth PAN Access-Point.
OBEX Object Push Profile	This is used as easy file send/receive.
File Transfer Profile	This is used as file send/receive regulated by the Bluetooth standard.

Bluetooth communication application and communication method as well as profile relationships are as follows.

Table. 2.51

Partner Bluetooth Equipment	Communication Application	Profile
Bluetooth mobile phone, Bluetooth modem, etc.	Dial up	DUN
Bluetooth access point (PAN Profile support)	LAN connection	PAN
Bluetooth printer	Printing to printer	Serial Profile
PC for Bluetooth + Active Sync	Connection with host PC	Serial Profile
Between handheld terminals, PDA that supports Bluetooth, PC that supports Bluetooth, etc.	File transfer between Bluetooth equipment	OBEX Object Push File Transfer

2.5.3. Security

This feature supports security functions laid down in the Bluetooth standard. The Bluetooth security is divided into authentication and encryption. These are realized by the use of PassKey (otherwise known as PIN code). PassKey is a shared (common) authentication key used when forming a connection and trust relationship (bonding) with Bluetooth equipment. A maximum of 16 characters (in ASCII code) can be used, but there may be limitations on the no. of digits and usable characters due to the specifications of partner Bluetooth equipment. Also PassKey input must be done within 30 seconds from a time when PassKey input request is generated. Note that PassKey input is not required once "device trust" has been established with Bluetooth equipment in previous connection. However, the partner Bluetooth equipment must have also the trust relationship in memory.
Encryption is executed using a link key generated after PassKey exchange and a cipher key generated from a 128-bit random number. Here, the partner Bluetooth equipment also must support the encryption. PassKey exchange is required for Bluetooth connection when encryption is set enabled.

2.5.4. COM Port

The following are the COM ports used with Bluetooth.

Table. 2.52

Serial Profile (Client)	COM6
Serial Profile (Server)	COM7
DUN (Dial-Up Network)	BTP1

Simultaneous Use of multiple Bluetooth COM Ports
Multiple Bluetooth COM ports cannot be opened simultaneously and used.

2.5.5. Communication Procedures

The following are the basic procedures for using Bluetooth to communicate.

Initializing Bluetooth

This function initializes the Bluetooth using either the Bluetooth tool or the Common Device Control Library. It will turn ON the power to the Bluetooth module integrated in the terminal and initialize the Bluetooth protocol stack.

1. Searching a Bluetooth equipment
   Searches a Bluetooth equipment using the Bluetooth tool or the Common Device Control Library. This sends out an equipment search radio wave and captures information from Bluetooth equipment operable in the vicinity.
2. Capturing service information
   Captures service information using either the Bluetooth tool or the Common Device Control Library. This captures the current usable service (profile) information of the partner Bluetooth equipment.
3. Security authentication with PassKey exchange
   The partner Bluetooth equipment may request a PassKey at a time of capturing service information and establishing Bluetooth connection. In case the Bluetooth tool is used, the same PassKey is input for both Bluetooth equipments (the terminal and the partner Bluetooth equipment) when a dialogue window appears requesting PassKey input. In case the Common Device Control Library is used, the PassKey must be set in advance by executing the relative functions for setting PassKey.
4. Establishing the connection
   Establishes a Bluetooth connection using either the Bluetooth tool or the Common Device Control Library. After the connection has been established, communication in Bluetooth can be continued using the selected profile until the connection is terminated.
5. Terminating the connection
   Terminates the connection using either the Bluetooth tool or the Common Device Control Library.
6. Closing the Bluetooth
   Closes the communication via Bluetooth either by ending use of the Bluetooth tool or by executing relative functions of the Common Device Control Library for closing the communication, and then turns off the power to the integrated Bluetooth module.

2.5.6. Communication Procedures by Profile

While Bluetooth communication takes place, there is a chance that the communication link may be interrupted due to the air condition, so the retry process is always recommended in application to verify the communication. In general, it is recommended also that the retry process should be carried out in any wireless communication including WLAN if it takes place within the vicinity by other equipment using the same frequency band ("ISM" band) such as microwave oven.

Serial Profile
Bluetooth connection can be managed using either the Bluetooth tool or the Common Device Control Library.

DUN (Dial-Up Network)
Bluetooth connection can be managed using either the Bluetooth tool or the Common Device Control Library. The communication will take place with RAS setting using "BTP1". After the connection has been established, communication via the TCP/IP protocol is possible.

PAN (Personal Area Network)
Once connection to Access-Point has been established using the Bluetooth tool, communication via the TCP/IP protocol is possible.

OBEX (Object Push Profile)
File transmission or reception using the Bluetooth tool is possible.

FTP (File Transfer Profile)
File transmission or reception using the Bluetooth tool is possible.

2.5.7. Process after Communication Interruption

With Bluetooth communication, there is a chance that the communication link may be interrupted due to the radio wave condition in air. An error occurred during the communication is detected by executing **WriteFile API** function or **ReadFile API** function, etc.
In case where the communication is interrupted, carry out the normal Bluetooth interruption process using the Bluetooth tool or in application and then retry to establish the same connection for communication. If the normal Bluetooth interruption process is not made, unconformity in the Bluetooth stack will occur so that the lower layer is disconnected whereas the upper layer is still being connected causing the retry of establishing the connection is not possible.

2.5.8. Processing During Suspend and Resume

When the terminal goes into suspend mode while Bluetooth is being used, the power to the Bluetooth module integrated in the terminal will be automatically turned off. After that, when the terminal resumes operation mode, the power to the Bluetooth module also will be turned on automatically. Once the power is turned off, all the parameters related to Bluetooth communication return to their initial states. These parameters must be set again in the Bluetooth module by initializing the Bluetooth stack. If the Bluetooth tool is used, it will automatically detect “suspend” and “resume” modes, and automatically initialize the Bluetooth stack. Note, however, that if WakeOn Bluetooth function has been set enabled, the power to the Bluetooth module will remain on even if suspend is executed. This will not initialize the Bluetooth stack.

2.5.9. Setting SR Mode Parameter

When executing Bluetooth communication, the connection will be established by transmitting radio waves by master Bluetooth equipment to slave Bluetooth equipment. Note that it may take time sometime to make the establishment depending on a type of the partner Bluetooth equipment. Here, by altering the SR mode parameter (used in Bluetooth connection), radio waves sent out when the master Bluetooth equipment makes the establishment will change, and may reduce the time required to establish the communication. The SR mode parameter can be set in the following registry.

[HKEY_CURRENT_USER\SOFTWARE\RXBT\HCI]

Table. 2.53

Key	Setting Value	Meaning
DEFAULT_PAGE_SCAN_REP_MODE	dword: 0 or 1 or 2	0:R0, 1:R1, 2:R2

Notes:

- Change the SR mode parameter prior to Bluetooth connection.
- Even if the SR mode parameter is changed, the time required to establish connection with the partner Bluetooth equipment may not be reduced.

2.5.10. WakeOn Bluetooth Function

The terminal in suspend mode can be put into resume mode by communication initiated by the partner Bluetooth equipment. The following is an example of putting the terminal into resume mode by Bluetooth dial up communication using a Bluetooth mobile phone.

1. Set the information for connecting with other party's Bluetooth equipment in advance in the terminal (DT-X7) and Bluetooth mobile phone.
2. Set respectively the terminal in suspend mode and Bluetooth mobile phone in waiting mode to receive a mail from server.
3. Bluetooth mobile phone receives task mail from the server. The server disconnects after sending out the mail.
4. Bluetooth mobile phone activates as master and makes a connection with the terminal.
5. The terminal resumes operation mode and completes Bluetooth connection, and then receives the task mail from the Bluetooth mobile phone.
6. After receiving the task mail, the terminal disconnects the Bluetooth connection.
7. Application in the terminal will execute Bluetooth connection to the Bluetooth mobile phone using Dial Up Profile.
8. The terminal will execute dial up to the server via the Bluetooth mobile phone.
9. The application in the terminal will execute sending/receiving data to/from the server after dial up completes.
10. After sending/receiving data completes, dial up connection will be disconnected by the terminal. The Bluetooth connection will be disconnected as well.

2.6. WLAN

The IEEE802.11b and IEEE802.11g WLAN is operable on the models, DT-X7M10R. The IEEE802.11b and IEEE802.11g standards utilize unlicensed 2.4 GHz ISM (Industry, Science, and Medical) frequency band, which is used for close range wireless communication.

Device Name

With terminal, the device name used to capture data about the WLAN driver with **DeviceIoControl** function is “PY55BG1”.

2.6.1. Basic Specifications

Roaming

This function automatically switches Access-Point in environment where two or more Access-Points with identical SSID code exist.

Power Saving

This saves the power by automatically turning off the power to the integrated WLAN module in the terminal when communicating does not take place.

AdHoc

This operation mode provides a direct communication between wireless equipments without the use of Access-Point. Note, however, that the AdHoc mode is not recommended because connection problem may occur.

WEP

This is an encryption function that uses RC4 method for safe communication. It supports 40-bit (64-bit)/104-bit (128-bit).

TKIP

TKIP is supported to combat the weakness with WEP encryption.

802.1x Security

This can strengthen authentication and establish a safer WLAN. Usually, this is interlinked with TKIP. It supports PEAP-EA, P-MS-CHAP-V2, and EAP-TLS.

2.6.2. Expanded Features

Power ON/OFF Control

The power to the integrated WLAN module can be controlled in application. Turning off the power when the WLAN module is not in use can save power, prevent line congestion and allow the on-board use in aircraft.

Operation Configuration File

The operation configuration file can be used to set each default value of the WLAN settings.

Resume Operation

After the terminal went into suspend mode and then returned in resume mode during wireless operation, this will automatically establish connection again with the Access-Point to enable continuous wireless communication.

Out of Range, In Range

This will automatically establish connection again with the Access-Point to enable continuous wireless communication when the terminal returns within the range from out side of the range of the Access-Point during wireless operation. This will automatically reconnect to the Access-Point if connection establishment with the Access-Point cannot be maintained due to noise or interference, or roaming is not possible for some reason.

2.6.3. Roaming

This feature automatically switches the Access-Point located in environment where two or more Access-Points with the identical SSID code exist.

1. Searches for Access-Points that can be communicated with the terminal, and lists up radio wave status of each Access-Point.
2. Compares radio wave status of the currently connected Access-Point with those for the listed Access-Points.
3. If the comparison proves that one of the listed Access-Points has a better radio wave status than the one currently being connected with the terminal, the terminal will make a request of roaming to that Access-Point.
4. If roaming permission comes from the Access-Point to the terminal, the roaming will complete. Note that if the roaming fails, the connection establishment will be disconnected and then connected again.

Notes:

- In some cases, the Access-Point may request the terminal for forcible roaming or reconnection with other Access-Point.
- If connection establishment of the Access-Point being connected with the terminal is terminated due to some reasons such as turning off the power on the Access-Point, the terminal may be forced to make a connection with other Access-Point.
- If it takes time for Access-Point to correspond for roaming request made by the terminal, the reconnection process may be initiated.
- If DeAuthentication or DisAssociation message issued by the Access-Point that is being connected with the terminal after roaming, the connection establishment between the Access-Point and the terminal may be interrupted temporarily and then connected again.

2.6.4. Zeroconfig

This feature coordinates with the module firmware and the WLAN driver to perform some of the WLAN link management and the Network management.

1. If multiple SSIDs are registered as prioritized connections, attempt to establish connection will be performed to each registered SSID. In this case, the interval of time period for reconnecting will become prolonged. If the reconnection time is considered to be as importance, register one SSID only as prioritized connection.
2. Reconnection loop process will initiate when a disconnection notification is issued by the module, or when Association fails.
3. The reconnection loop process will end when the terminal succeeds connection establishment with one of the multiple SSIDs registered as prioritized connections.

Connection Process

Zeroconfig will instruct the WLAN driver and the WLAN module to make connection when finding an Access-Point registered in the prioritized SSID list. Each firmware of the driver and the module both instructed initiates necessary process following the rules of IEEE802.11b and IEEE802.11g standards to make connection with the Access-Point. If multiple SSIDs are registered as prioritized connections in the prioritized SSID list, attempt to establish connection with each SSID will be made.

Disconnection Process

In the following cases, the connection establishment with Access-Point will be disconnected. Firmware in the WLAN module judges on the disconnection and the roaming process.

1. When the quality of radio wave in air deteriorates because of interference from other WLAN equipment, noise, similar causes, or on-air communication by other WLN devices.
2. When the Access-Point locates far from the terminal, or when radio waves are weakened by obstacles
3. When other Access-Point that can allow roaming to avoid the poor environment described in the situations 1 and 2 above cannot be found.

Resume Process

The following processes are performed when the terminal goes into resume mode.

1. Unloading the driver
2. Loading the driver
3. Initializing
4. Scanning Access-Point
5. Creating the Access-Point list
6. Establishing connection with Access-Point
7. Changing the Task tray icon

2.6.5. Channels

The factory set default channels is set to “1CH-13CH” (13 channels).

2.6.6. WLAN Setting with Configuration File

The configuration file can be used to set the default values for the WLAN settings. By loading the configuration file into the terminal, settings required for WLAN operation can be easy.

- The configuration file is “\FlashDisk\System Settings\WLANCFG.ini”.
- If no configuration file is available, WLAN operation is initiated with the default settings.

Timing to Load the File

The timing for incorporating the configuration file is when a reset or a full reset is performed on the terminal. When loading the configuration, if the file itself does not exist, its format is wrong, or the file has been specified as “Disable configuration file”, the default settings will not be made using the configuration file.

Creation Method

The WLAN settings made using Microsoft’s “WLAN setting” will not be reflected in the configuration file.

File Format

File format of the configuration file is INI format with the specifications described below.

- The maximum size of the configuration file is 60Kbytes.
- A line starting with ";" is regarded as a comment. It is not regarded as a comment if it locates in the middle of a line.
- The separator for KEY and VALUE is "=". Space and tab, etc., also are included in KEY and VALUE. If a space is inserted after "=" in "SSID=□tunami", the SSID value is space + tunami.
- The end of a line is CR or CR/LF.
- The maximum length of a line is 256bytes.
- Section name, KEY, and VALUE are case sensitive.

WLAN section

All WLAN settings are made here.

Table. 2.54

Key	Setting Value
WLANPOWER	Specify turning on or off the power to the WLAN module. 1: Power ON 0: Power OFF
POWERSAVE	Specify the WLAN power save setting. 1: Enable power save. 0: Disable the power save.
WLANCFG	Specify "Enable or Disable" on the configuration file itself. 1: Enable the file. 0: Disable the file.
RoamingRSSILevel	Specify the roaming threshold value in dBm.
RoamingAvailableTime	Specify time period in second for starting roaming again.
RoamingRSSISpan	Specify intensity difference in dBm for radio wave during roaming.
BandConfig	Specify communication speed 0: Only IEEE802.11b 1: Both IEEE802.11b and IEEE802.11g

TCIP section

This is for setting the integrated WLAN module's IP address.

Table. 2.55

Key	Setting Value
DHCP	Specify "Enable/Disable" on the DHCP. 1: Enable DHCP. 0: Disable DHCP. The following settings are disabled if "Enable" is specified.
IPADDRESS	Specify IP address.
SUBNETMASK	Specify subnet mask.
DEFAULTGATEWAY	Specify default gateway.
DNS1	Specify primary DNS server address.
DNS2	Specify secondary DNS server address.
WINS1	Specify primary WINS server address.
WINS2	Specify secondary WINS server address.

Example of Configuration File

```
[WLAN]
WLANPOWER=1
POWERSAVE=1
WLANCFG=1
BandConfig=1
RoamingRSSILevel=-78
RoamingAvailableTime=15
RoamingRSSISpan=1
RoamingAvailableTime=60
BandConfig=1

MAX_SCAN_TIME=105
SCAN_CHANNELS=123456789ABCDE
WLAN_CFGTOOL=WLANCONFIG

[STATIC]
SSID=tunamiAP1200imai
ADHOC=0
SECURITY=WEP=1
AUTH=OPEN
WEP_OPEN_KEYINDEX=01
KEYDATA= 5C1E1455A2D504920483C59EA19AC2AB3F12821273BD2A17A9BE

WEP_OPEN_KEY=516DFEC900486137CB9D8C82993F184B508A916F5B5E733A0159
```

Continue.

```
[TCPIP]
DHCP=0
IPADDRESS=192.168.1.100
DEFAULTGATEWAY=192.168.1.100
SUBNETMASK=255.255.255.0
DNS1=192.168.1.101
DNS1=192.168.1.102
WINS1=192.168.1.103
WINS2=192.168.1.104
```

2.7. Power Control

2.7.1. Low Voltage Monitoring

Four levels of the low voltage monitor control are provided for the terminal.

Table. 2.56

Level	Description	Action	Next Startup
VDET1	Warning against low voltage of the battery pack	Issues warning message for low voltage of the battery pack	-
VDET2	Turning off the power due to low voltage of the battery pack	Turns off the power.	Resume (with warning at time of startup)
VDET3	Emergency turning off the power due to low voltage of the battery pack	Forces the terminal to turn off the power.	Warm boot (with warning at time of startup)
VDETCF	Turning off the power due to low voltage of card	Turns off the power.	Resume (with warning at time of startup)

Battery Pack

The following shows statuses and levels available for the battery pack.
Normally the battery status is checked once every five seconds. However, it will be performed every second when the power management property is displayed. Taking last immediate ten data of the power voltage from AD converter, its average is calculated to classify the status in three levels, either “Almost exhausted (10 % of the capacity or less)”, or “Low (30 % of the capacity or less)”, or “O.K. (30 % of the capacity or more)”. The level is 10 % of the capacity when VDET1 occurs.

Table. 2.57

Status/Level		Notation	Description
Status	External	External power	Power by AC adaptor is being supplied, and charging the battery pack is complete.
	Recharge	Recharging	Power by AC adaptor is being supplied, and charging the battery pack continues.
	Normal	Main battery	Power by the battery pack is being supplied.
Level	1	O.K.	The battery pack has been fully charged or has a sufficient capacity.
	2	Low	The battery voltage level is half or less.
	3	Almost exhausted	“VDET1” has been detected.

Memory Backup Battery

The following shows levels available for the memory backup battery.

Table. 2.58

Level	Notation	Description
1	O.K.	The memory backup battery has been fully charged or has a sufficient capacity.
2	Almost exhausted	The memory backup battery is in abnormal state.(10%以下)

2.7.2. Power ON Factors

The followings are the power ON factors. These factors can be set enabled or disabled using the Common Device Control Library.

- The Power key is pressed while the power is off.
- A time period set for the Alarm function has been elapsed.
- The terminal is mounted on the cradle while the power is being supplied by AC adaptor via the cradle.
- Trigger key has been pressed.
- WakeOn call has been issued by the Bluetooth module.
- VDETI has occurred while the WakeOn function has been set enabled.

Power ON Disable Factors

Factors that do not allow turning on the power are as follows.

- When the battery pack's voltage level is not sufficient enough to start up the terminal (VDET2 level or lower).
- The battery cover lock is open.

2.7.3. Power OFF Factors

The following are the power OFF factors.

- The Power key is pressed while the power is on.
- Neither key input, disk access, card access, nor communication is performed within a preset time period.
- Output voltage from the battery pack is low (VDET2, VDET3) (see note).
- The battery cover lock is open.
- An excess of load on the CF card lowers voltage (VDETCF) (see note).
- Internal temperature in the terminal exceeds over 70 ºC.

Note:
Warning message will appear a next time when the power is turned on.

Power OFF Time

When either VDET2, BCVR, VDETCF or VDET3 occurs, the power will be turned off after the respective time periods elapse.

Table. 2.59

VDET2	Turning off (resume OFF) the power after 200 milliseconds.
BCVR	
VDETCF	
VDET3	Forced to turn off the power after 500 milliseconds.

2.7.4. Power Saving

Idle

The power will be saved by putting the CPU into **idle state** when event standby status is detected by either the terminal or an application running on the terminal. The peripheral devices are running while the CPU is in the idle state.

APO (Auto Power OFF)

The power is automatically turned off when the state of no key input, no disk access, no card access, or no communication, etc., is detected within a preset time period. Setting the **APO** function enabled or disabled, or a time period to activate the function can be performed using the Common Device Control Library.

Dimming and ABO (Auto Backlight OFF)

The backlight is automatically dimmed or turned off when a preset time period has elapsed if the state of no key input, no disk access, no card access, or no communication, etc., is detected within the period. Setting a time period before starting dimming and a time period before turning off the backlight (Auto Backlight OFF), and setting "Enable or Disable" on the dimming and the Auto Backlight OFF functions can be set using the Common Device Control Library.

CPU Clock Frequency Control

The CPU clock frequency is changed to one of the frequencies described in the following table depending on the CPU load or user designation. It can be changed at the control panel or using the Common Device Control Library. The default is "AUTO".

Table. 2.60

POWERSAVE	104 MHz
NORMAL	208 MHz
TURBO	520 MHz
AUTO	Automatically changes frequency to 104, 208, 520 or 13 MHz depending on CPU load.

Virtual Power OFF/WLAN Standby

This is standby mode for WLAN operation. The Common Device Control Library is used in application to turn off the LCD, keys and set the CPU frequency to "POWERSAVE" mode to save the power. Other peripheral devices are running.

Table. 2.61

Display	OFF
KEY	Lock
APO	Prohibit
Turning off the power with the Power key	Prohibit
CPU clock frequency	POWERSAVE

2.7.5. CPU Power State Control

The following shows the power states operable on the terminal.

Table. 2.62

State		Contents
Discharge		State in that the battery pack has been discharged, and the super capacity has been also discharged. Neither RAM nor RTC will be backed up.
RTC backup		State in that only the RTC is being backed up. RAM is not backed up.
SLEEP mode		State in that the power on the terminal is turned off, and peripheral devices are also turned off. RTC and RAM are backed up.
RUN mode		State in that the terminal is running or application is running on the terminal.
	POWERSAVE	The CPU is running at 104MHz.
	NORMAL	The CPU is running at 208MHz.
	TURBO	The CPU is running at 520MHz.
	AUTO	The CPU is running at either 104, 208, 520, or 13MHz depending on the CPU load.
IDLE mode		State in that the terminal or application is waiting for an event to occur.
	DeepIdle	If the CPU clock frequency has been set to “AUTO” mode, and the backlight is turned off, the CPU runs at 13MHz (“DeepIdle” mode). Note however that the CPU will be in ordinary “Idle” state, not DeepIdle mode, if periodical accesses are made to the integrated WLAN card.

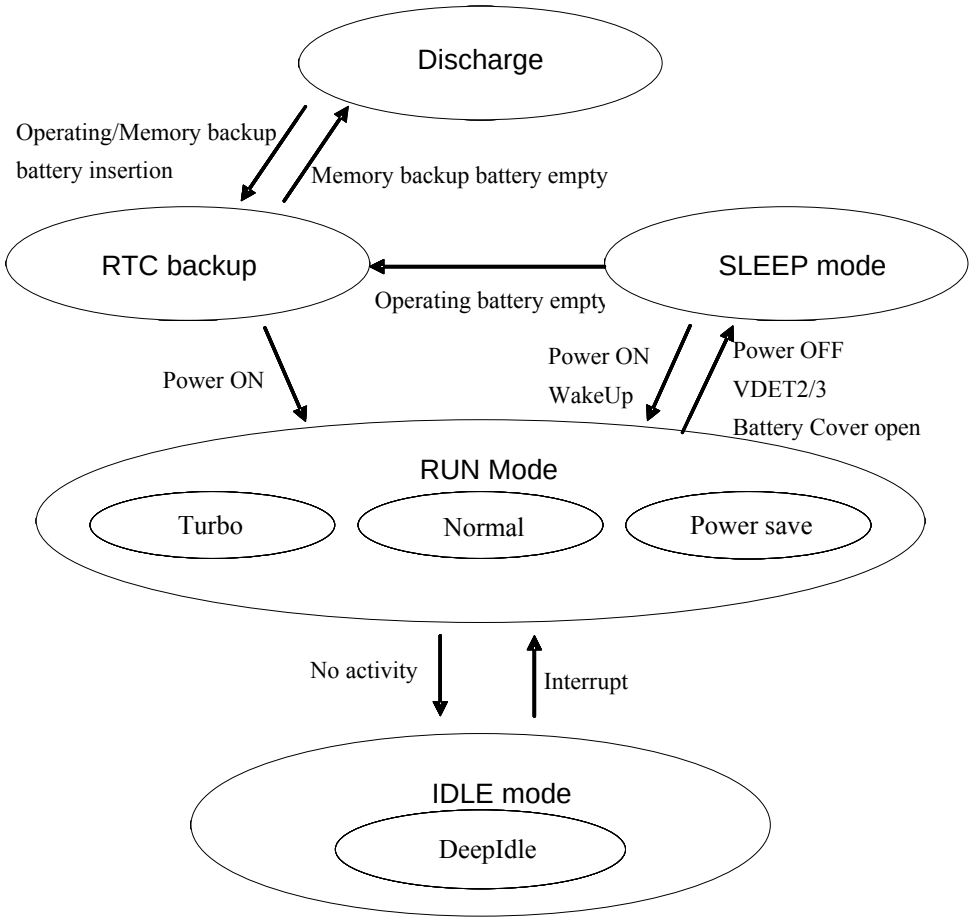

Discharge
Operating/Memory backup
battery insertion
Memory backup battery empty
RTC backup
SLEEP mode
Operating battery empty
Power ON
Power ON
WakeUp
Power OFF
VDET2/3
Battery Cover open
RUN Mode
Turbo
Normal
Power save
No activity
Interrupt
IDLE mode
DeepIdle

Fig. 2.6

2.7.6. Charging, Supplying the Power

The optional Dual Battery Charger (HA-F32DCHG) can be used to charge battery packs (two at a time). Mounting the terminal on the USB Cradle (HA-F60IO) or on the Cradle-type Charger (HA-F30CHG) or on the Ethernet Cradle (HA-F62IO) allows charging the battery pack installed in the terminal and supplying the power to the terminal.

2.7.7. Temperature Control

If temperature rise is detected in the terminal when running at the highest clock frequency (under such the condition that the CPU speed at “TURBO”, the integrated WLAN module in active mode, etc.), a warning message stating that “An error occurs !! Original reference cannot be found” appears and the power is turned off to protect the integrated devices in the terminal.

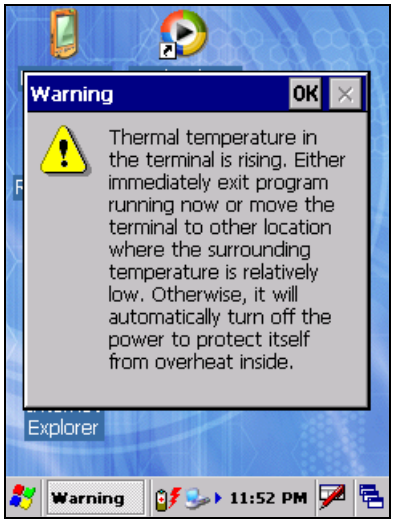

Warning
OK
Thermal temperature in the terminal is rising. Either immediately exit program running now or move the terminal to other location where the surrounding temperature is relatively low. Otherwise, it will automatically turn off the power to protect itself from overheat inside.
Explorer
Warning
11:52 PM

Fig. 2.10

Either turn off the power and leave the terminal unused for a while move it to a location where the surrounding air temperature is cooler.
If power is turned off due to the temperature limit, a warning message stating “An error occurs !! Original reference cannot be found” will appear when the power is turned on a next time.

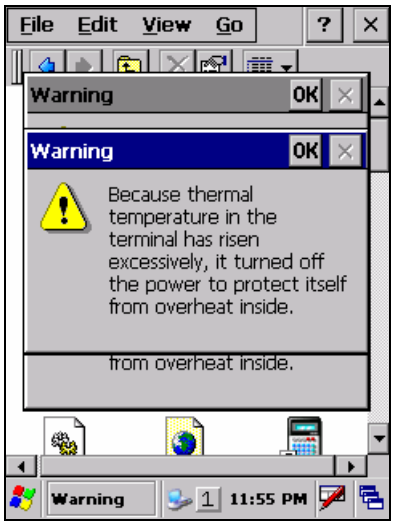


Fig. 2.11

2.8. Security

2.8.1. Setting Password for Terminal

This is the password setting implemented in the WindowsCE OS. A password can be set at the control panel.

2.8.2. Setting Password for Date and Time Properties

This is to enable setting a password for accessing the date and time setting in order to prevent the user from changing the settings of the terminal. Use **PASSTOOL** located under Windows folder to make the setting. Password registered will be saved in the FlashROM along with individual ID setting, etc.

2.8.3. Setting Individual ID

Individual ID is written into a predetermined area in the FlashROM at time of shipping from the factory. Distributor code (a code used to protect distributor developed software from illegal copying by unauthorized party) is saved in other area different from the individual ID. The individual ID incorporates the product code and serial number etc. and always becomes a unique code different from other units. The Common Device Control Library can be used to read the individual ID set on each unit of the terminal.

2.8.4. Setting Distributor ID

The individual ID and distributor ID can be used by the distributor and user to prevent illegal use of application by unauthorized party at a time of installing or executing the illegally copied application by checking these preset codes. The distributor code is saved in the FlashROM area, and read using the Common Device Control Library.

3. Application

This chapter explains about applications available in the terminal. They are classified into several groups described in the table below.

Table 3.1

Classification	Description
Control Panel Applets	Start up the applets at the control panel. The applets are used to set the parameters required for the terminal and integrated devices.
Application programs	Start up applications by accessing the menus in order of **Start → Program**. Operational screens of each application appear and then the related processes are executed.
Utilities	The utilities are executed as co-process or auxiliary program in user applications.
Host applications	Application programs used by host PC.

3.1. Control Panel Applets

The control panel applets are programs that display each content of the various parameters for the terminal itself and change the settings. The control panel applets are as follows.

Table 3.2

Applet	Description	CASIO	MS
Bluetooth Connection	Executes connection establishment with Bluetooth device.	Yes	--
WLAN Power (note)	Sets up the powers for CF card and WLAN.	Yes	--
CPU Speed	Sets up the CPU's clock frequency.	Yes	--
Error Reporting	Sets up error report.	--	Yes
PC Connection	Changes the desktop settings of connection with PC.	--	Yes
USB connection enabled	Checks USB connection status.	Yes	--
Remove Programs	Deletes application program installed in the terminal.	--	Yes
Internet Options	Changes internet settings.	--	Yes
Keyboard	Changes the speed of key repeat input and the maximum waiting time.	--	Yes
System	Displays system information and changes memory settings.	--	Yes
Terminal Server Client Licenses	Displays authentication license for registered terminal service client.	--	Yes
Dialing	Changes telephony settings.	--	Yes
Network and Dial-up Connections	Connects the terminal to other PC, network or internet.	--	Yes
Version Info	Displays the terminal version information.	--	Yes
Vibrator	Sets up the vibrator's operation.	Yes	--
Password	Changes owner password and security options.	--	Yes
Power	Changes the power management options.	--	Yes
Buzzer	Sets up buzzer sound volume.	Yes	--
Volume & Sounds	Sets up type and its sound volume.	--	Yes
Mouse	Adjusts double click speed.	--	Yes
Laser Setting	Changes the scanner settings.	Yes	--
Display	Changes the desktop background.	--	Yes
Screen Resolution	Sets up the resolution setting.	Yes	--
Storage Manager	Manages storage location and its disk partition.	--	Yes
Owner	Changes owner's personal profile.	--	Yes
Certificates	Displays and changes the terminal's system and its digital certificate.	--	Yes
Regional Settings	Changes display methods of numeric value, currency, date and time.	--	Yes
Date/Time	Changes settings for data, time and time zone.	--	Yes

Continue.

Input Panel	Changes the current input method and options.	--	Yes
Brightness	Changes the backlight brightness.	Yes	--
WLAN Settings	Sets up the WLAN's operation.	Yes	--

Note:

DT-X7M10R and DT-X7M10R-CN models only

3.1.1. Bluetooth Connection

This applet executes connection establishment with other Bluetooth device. For detailed explanation on the Bluetooth settings, refer to the DT-X7 series Bluetooth Setting Manual available separately.

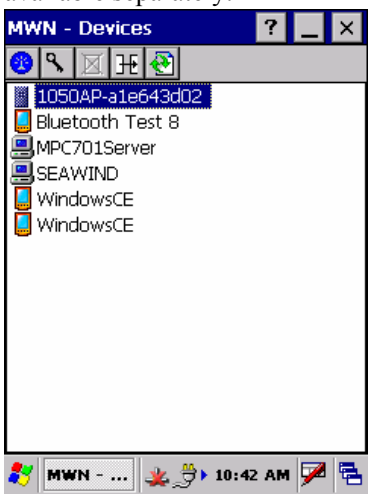


Fig. 3.1

3.1.2. WLAN Power

This applet is to set up the settings for power to a CF card or the integrated WLAN module (DT-X7M10R and DT-X7M10R-CN models only) and to display the detected status on the power.

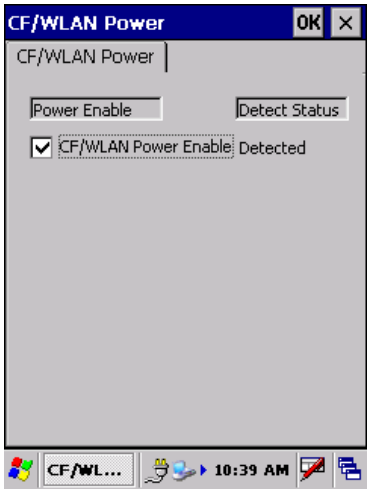


Fig. 3.2

CF/WLAN Power Enable Detected

Set up the checkbox enabled (see Fig. 3.2) to supply the power to the integrated WLAN module.

3.1.3. WLAN Settings

This applet is to set up the settings for WLAN connection.

CASIO WLAN Setting Tool

The tool of **WLANConfig** starts up by displaying the WLAN settings stored in the "ini" file if it exists in the terminal, or the default WLAN settings if it does not exists, and then displays **IP Setting** tab as shown in Fig. 3.3.

IP Setting Tab

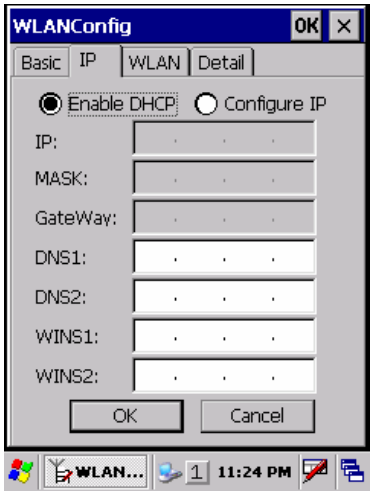


Fig. 3.3

Basic Setting Tab

This tab sets up SSID and Security. Click the radio button of Authentication to enable "Open" for WEP. Select either 128 bit radio button or 64 bit radio button for Key Length. For Key Index, up to four kinds of key can be registered.

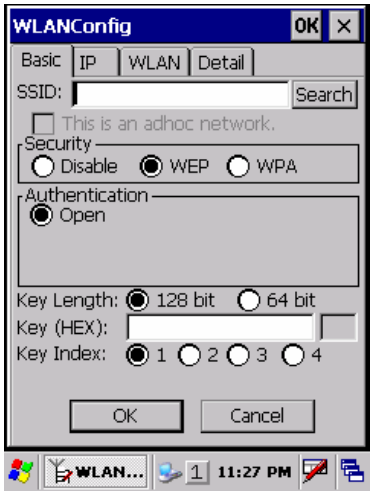


Fig. 3.4

Search Button

This button invokes the NetSearch utility.

Security, Authentication Fields

Select one of the three radio buttons in the Security field. By clicking the WPA radio button, authentication in either PSK, EAP-PEAP or EAP-TLS can be set up. If PSK is selected in Authentication, input a key in the Key field to register. See Fig. 3.5.

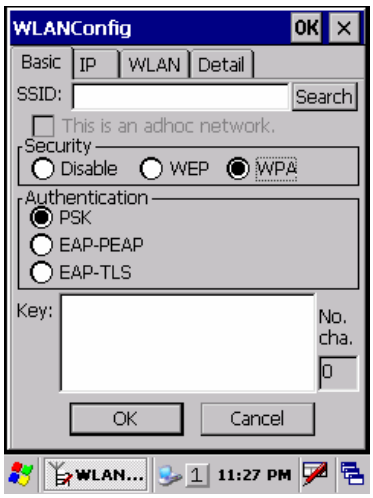


Fig. 3.5

If EAP-PEAP or EAP-TLS is selected, user name, domain validate server, etc. can be set up.

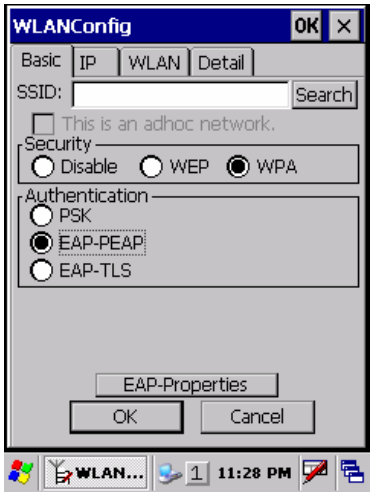


Fig. 3.6

WLAN Setting Tab

This tab sets up the basic WLAN settings such as power to the WLAN module, power save mode, WLAN standard and the threshold level (RSSI level) of roaming.

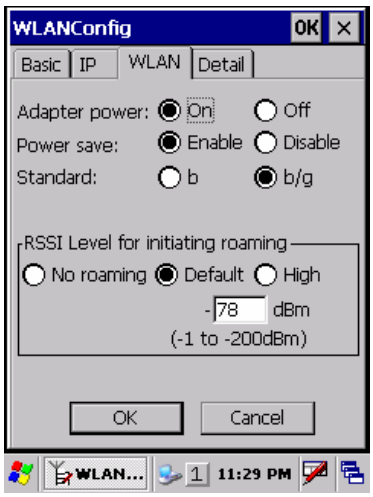


Fig. 3.7

Detail Setting Tab

This tab sets up the detailed settings. It allows to set up which application, either “NetSearch” or “NetUI”, to be used to set up for the display of WLAN condition. “NetUI” is a tool from Microsoft. AdHoc connection, all security settings and a comment for the configuration file (“ini” file) can also be set up. For **Advance Setting** and **Version** buttons, refer to the next page.

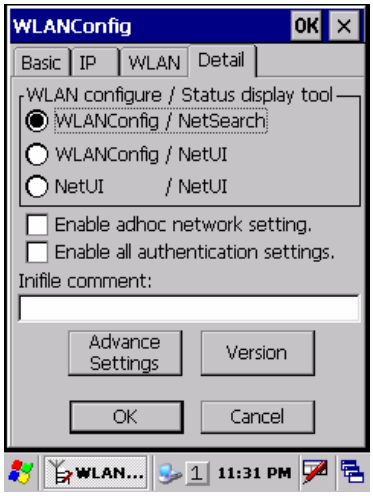


Fig. 3.8

Advance Setting Button

This button (see Fig. 3.8) displays a window of **Advance Setting** shown in Fig. 3.9. The window sets up frequency channels from no. 1 to no. 14 used in WLAN operation and the detailed settings for the roaming.

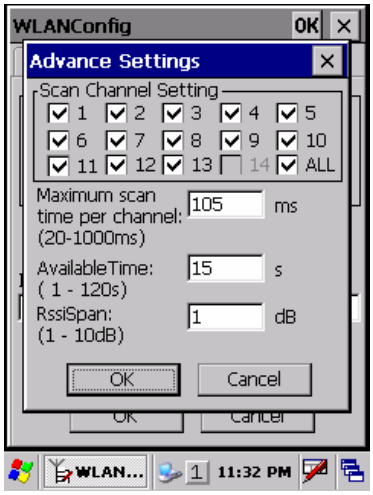


Fig. 3.9

Version Button

This button display the version information about the application currently running.

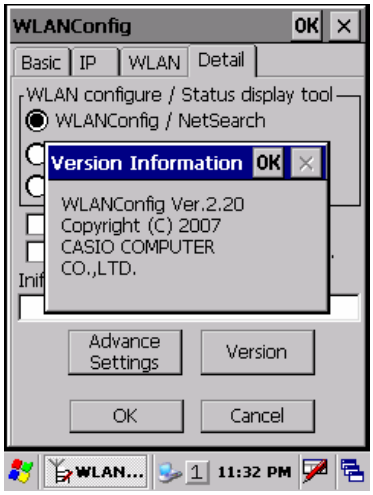


Fig. 3.10

If **OK** button in Fig. 3.10 is clicked, “Inifile Save Options” screen in Fig. 3.11 appears. This screen is to save the settings you made on each tab of **Basic Setting**, **IP Setting**, **WLAN Setting**, and **Detail Setting** of the WLANConfig tool. Cliking **OK** button in Fig. 3.11 will save the settings made on the four tabs to the ini file, and then start up the terminal to run in WLAN operation. Or, clicking **Cancel** button saves the settings to the ini file, but does not start up the terminal. The settings will not become effect until when a reset on the terminal is performed a next time.

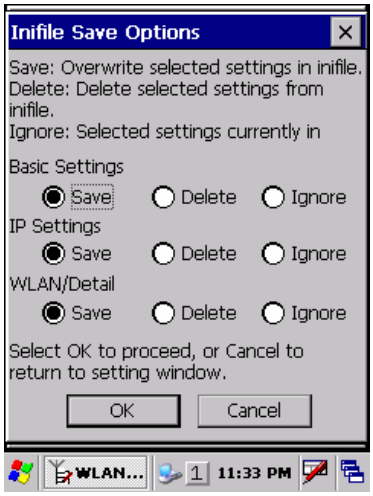


Fig. 3.11

Wireless Information Tab (the tool from Microsoft)

This tab displays a list of networks (SSID codes) connectable to the terminal and the current network being connected and the radio wave signal strength. See Fig. 3.12.

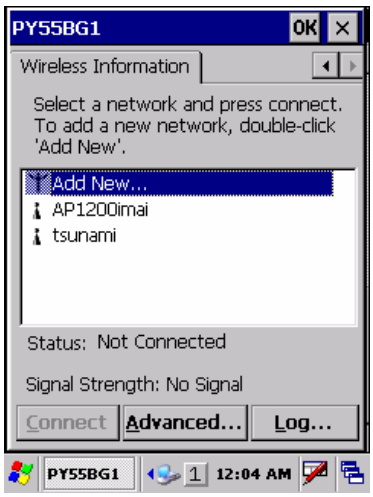


Fig. 3.12

Double click a network highlighted on the screen you wish to display the Wireless Property screen.

Connect Button

This button displays the Wireless Property to set up the parameters required to connect the terminal with the Access-Point.

Advanced... Button

This button displays Advanced Setting screen to set up the detailed settings for WLAN connection.

Log... Button

This button displays operation logs for the WLAN operation.

Wireless Properties Screen

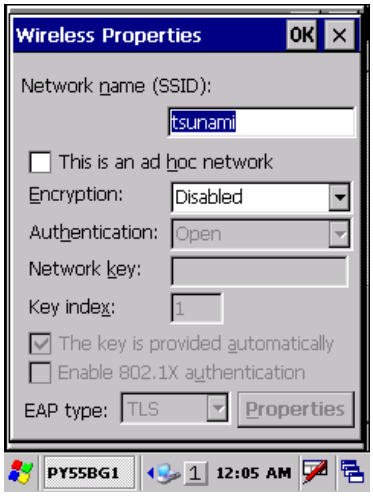


Fig. 3.13

Network name (SSID)

This field is to specify a network (SSID) name.

This is an ad hoc network

Set the checkbox enabled to communicate in AdHoc mode. Note, however, that the AdHoc mode is not recommended because a communication difficulty may occur.

Encryption

Using the pull-down menu, set **Encryption** to either “Disabled” or “WEP”. When “WEP” is selected, specify the appropriate items in the fields listed below and set the checkboxes enabled or disabled as needed. See Fig. 3.13.

- Authentication
- Network key
- Key index
- The key is provided automatically
- Enable 802.1x authentication
- EAP type

Connection Setting Screen

IP Address Tab

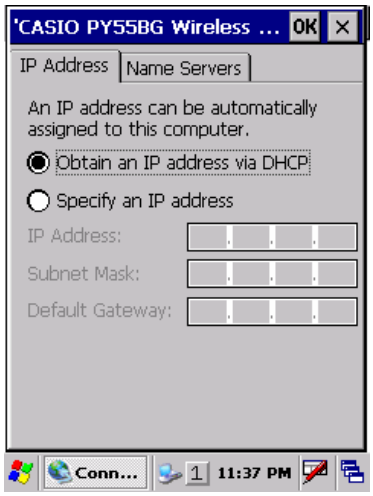


Fig. 3.14

Obtain an IP address via DHCP

Set this radio button enabled if the DHCP server is used.

Specify an IP address

Set this radio button if an IP address is specified directly without using the DHCP server. In this case, enter codes in each field of **IP Address**, **Sub Net Mask** and **Default Gateway**.

Name Servers Tab

This tab is to specify **Primary DNS**, **Secondary DNS**, **Primary WINS** and **Secondary WINS** as required.

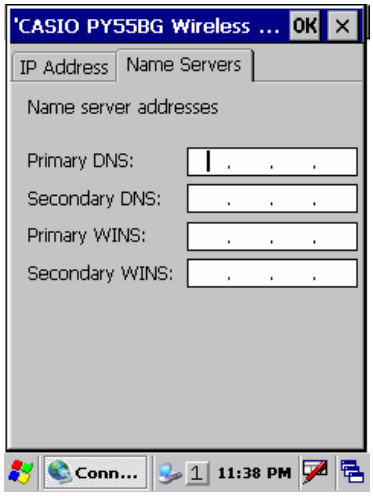


Fig. 3.15

Advanced Wireless Settings Screen

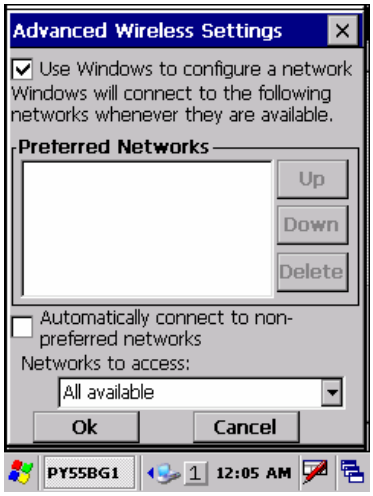


Fig. 3.16

Use Windows to configure a network

Enable (set to on) this checkbox if Windows is used to configure the network settings. In this case, specify the appropriate items in the fields listed below and set the checkbox enabled or disabled as needed. See Fig. 3.16.

- Preferred Networks
- Automatically connect to non-preferred networks
- Networks to access

3.1.4. CPU Speed

This applet is for setting the CPU operating mode.

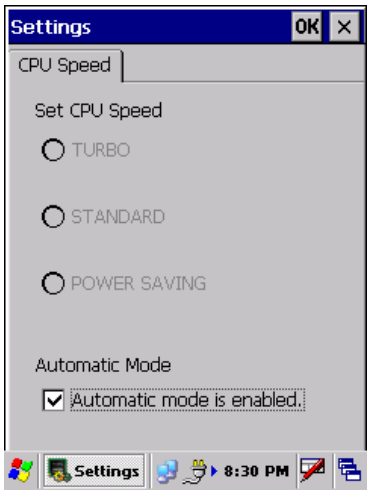


Fig. 3.17

TURBO

This mode sets the CPU frequency to 416MHz.

Note:
This mode is disabled when the automatic power save mode has been set enabled.

STANDARD

This mode sets the CPU frequency to 208MHz.

Note:
This mode is disabled when the automatic power save mode has been set enabled.

POWER SAVING

This mode sets the CPU frequency to 104MHz.

Note:
This mode is disabled when the automatic power save mode has been set enabled.

Automatic Mode

This mode will automatically switch the CPU frequency to either **TURBO**, **STANDARD** or **POWER SAVING** mode according to the load of the CPU. Enable the checkbox to set the mode enabled. See Fig. 3.17.

3.1.5. PC Connection

This tab is to set connecting method with PC.

Fig. 3.18

Enable direct connections to the desktop computer

Set the checkbox enabled to establish a connection in **ActiveSync** with PC via USB Cradle.

Change Connection … Button

This button displays a window (Change Connection) to change the method of connection method with PC. To set the connection establishment with PC in **ActiveSync** via USB Cradle, select **USB Default** in the pull-down menu.

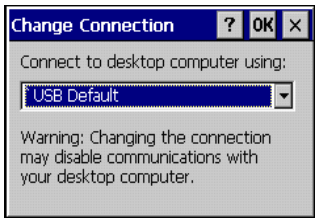


Fig. 3.19

3.1.6. USB Connections Enabled

This applet displays connection establishment of the terminal with PC or other device in USB mode.

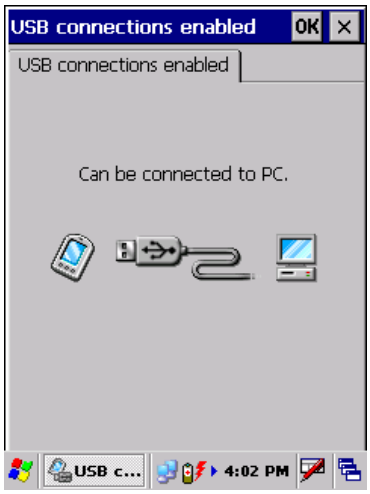


Fig. 3.20

Can be connected to PC message will appear in the tab (see Fig. 3.21) when the terminal is connected to PC in USB Client mode (USB Function mode). Or, **Can be connected to LAN or modem** message will appear when the terminal is connected in USB Host mode.

3.1.7. Remove Programs

This applet is used to delete installed programs in the terminal.
Select an application to be deleted in the list appeared in the tab and then press **Remove.** button to delete it. Programs burnt in the ROM in the terminal cannot be deleted.

Fig. 3.21

3.1.8. Internet Options

This applet is to set up Internet Explorer options. Refer to the descriptions below about the fields and the buttons in the tab.

General Tab

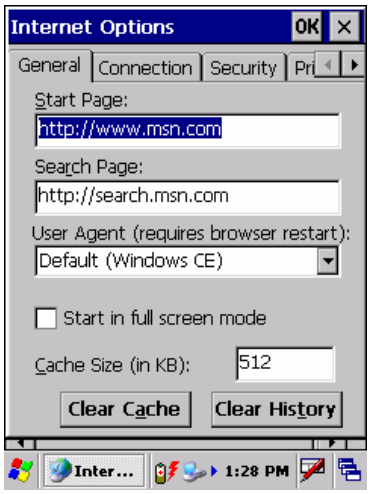


Fig. 3.22

Start Page

This field is to specify the start page of URL.

Search Page

This field is to specify URL used with search page.

User Agent

This field is for selecting user agent.

Start in full screen mode

Set the checkbox enabled to display the full screen when the Internet is initiated a next time.

Cache Size (in KB)

This field is to specify the cache size in Kbytes.

Clear Cache Button

Press this button to clear the cache memory.

Clear History Button

Press this button to clear the history.

Connection Tab

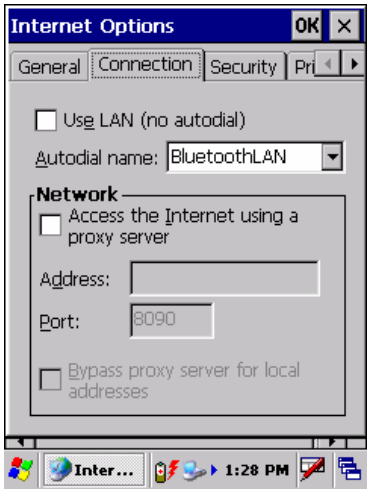


Fig. 3.23

Use LAN (no autodial)

Set the checkbox enabled to connect the terminal in LAN mode.

Autodial name

Select an autodial name in the pull-down menu when communication is made without the use of LAN.

Access the Internet using a proxy server

Set the checkbox enabled when a proxy server is used for accessing to Internet. In this case, specify the appropriate items and value in the fields below as needed.

- Address
- Port
- Bypass proxy server for local address

Security Tab

This tab is to set up security by zone for **Internet**, **Local intranet**, **Trusted sites** and **Restricted sites**. See Fig. 3.25.

Fig. 3.24

Sites... Button

This button displays the site adding screen to enable adding the specified site specified in **Add this web to the zone** field to the selected zone.

Settings... Button

This button displays advanced setting screen for detail security setting by zone.

Privacy Tab

Fig. 3.25

Privacy level

This pull-down menu is to select a privacy level.

Default Button

This button returns the setting contents to the default values.

Advanced Button

This button displays the advanced privacy settings screen to set advanced settings of the privacy.

Sites Button

This button displays the per site privacy actions screen to set privacy by site.

Advanced Tab

This tab is for setting “Enabled” or “Disable” for each parameter of the Internet Options as required.

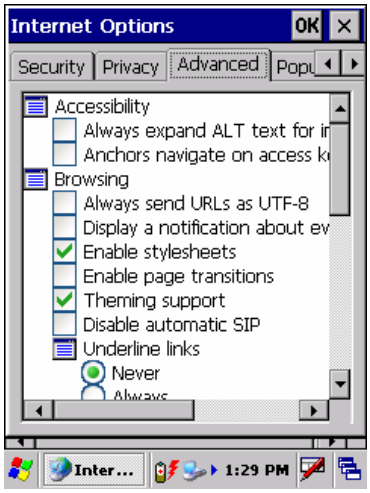


Fig. 3.26

Popups Tab

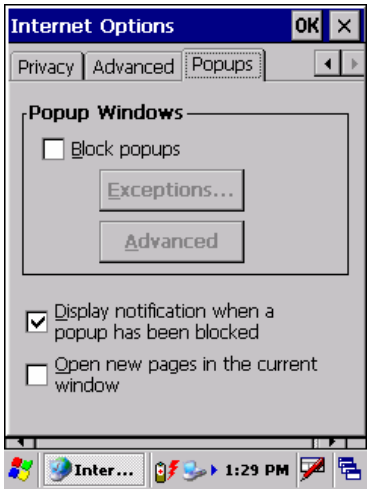


Fig. 3.27

Block popups

Set the checkbox enabled to disable popup windows.

Exceptions... Button

This button displays the popup exceptions screen to set up sites to be exempted from blocking popup windows.

Advanced Button

This button displays the popup filter screen to set up advanced settings of the popup block.

Display notification when a popup has been blocked

Set the checkbox enabled to display a notification when the popup has been blocked.

Open new pages in the current window

Set the checkbox enabled to display new pages in the current window.

3.1.9. Keyboard

This applet is for setting parameters concerned with operations by the keyboard.

Repeat Tab

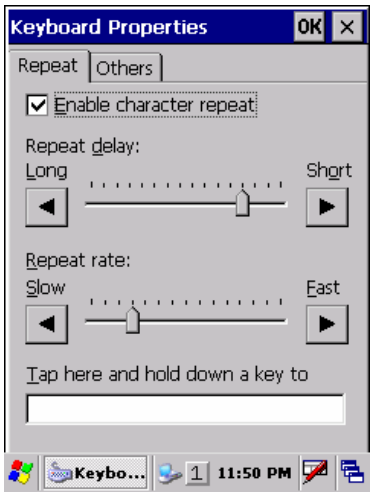


Fig. 3.28

Enable character repeat

Set the checkbox enabled to set repeating key entry.

Repeat delay

This adjustable slide is to set a waiting time period until when repeating key entry starts.

Repeat rate

This adjustable slide is to set an interval between repeating key entries.

Tap here and hold down a key to

The adjustments made in two parameters above with the adjustable slides can be checked by entering an actual key. First, click any where in the field (the box) and then enter a key and hold it down to make entering the key repeated.

3.1.10. System

This applet is used for displaying and setting parameters concerned with the internal system of the terminal.

General Tab

This tab displays OS version, integrated CPU name and available RAM size.

Fig. 3.29

Memory Tab

This tab is for setting proportional memory allocation between “Storage memory” and “Program memory”.

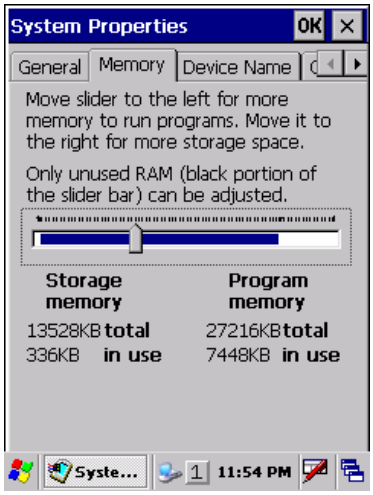


Fig. 3.30

Device Name Tab

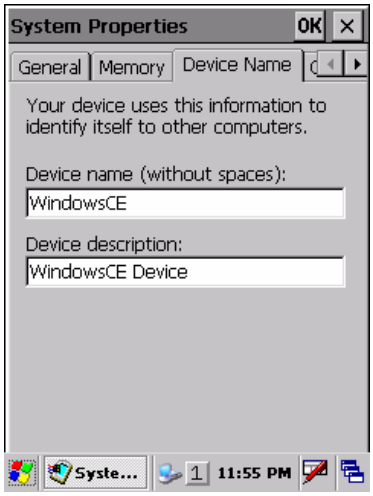


Fig. 3.31

Device name (without spaces)

This field is for setting device name for the terminal itself. Spaces within the device name entered in the field are not allowed.

Device description

This field is to enter text string for the device description.

Copyrights Tab

This tab is for displaying the OS copyright information.

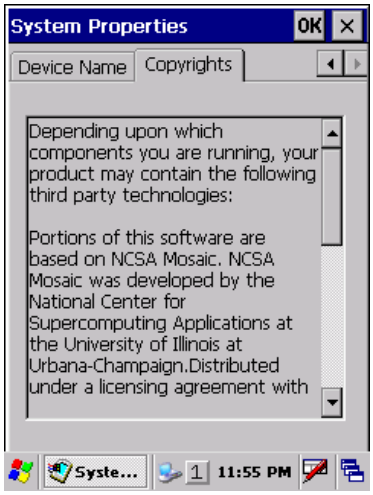

System Properties
OK
Device Name
Copyrights
Depending upon which components you are running, your product may contain the following third party technologies:
Portions of this software are based on NCSA Mosaic. NCSA Mosaic was developed by the National Center for Supercomputing Applications at the University of Illinois at Urbana-Champaign.Distributed under a licensing agreement with
Syste...
1
11:55 PM

Fig. 3.32

3.1.11. Terminal Server Client Licenses

This applet is used to display Terminal Server authentication licenses for client.

Fig. 3.33

Stored Licenses

This field is for specifying Terminal Server authentication licenses for client.

Delete Button

This button deletes a specified Terminal Server license.

Save... Button

This button saves a specified Terminal Server license.

3.1.12. Dialing

This applet is for setting telephony.

Fig. 3.34

Location

This pull-down menu is to select telephony information to be set.

New... Button

This button creates a new call location.

Remove Button

This button removes a call location.

Area code

This field is to specify an area code.

Country/Region

This field is to specify a country or regional code.

Tone dialing/Pulse dialing

These radio buttons are to select a line type.

Disable call waiting

Set the checkbox enabled to disable the call waiting function.

dial

This pull-down menu is for specifying dial that disables the call waiting function.

Edit... Button

This button displays the edit dialing patterns window to set up the following dialing patterns.

- For Local calls
- For Long distance calls
- For International calls

3.1.13. Network and Dial-up Connections

This applet is for setting connections used by dial up and LAN. The following connection types can be created.

Table 3.3

Type	Description
Dial up connection	Establishes network connection via phone line or ISDN line.
Cable connection	Establishes network connection with the terminal via cable (IrDA, Bluetooth included).
Virtual private network (PPTP)	This is a protocol provided by Microsoft for cipher communications. Information can be passed safely via the Internet because information is encrypted and sent/received between two PCs.
Virtual private network (L2TP)	This is a protocol that forms a virtual tunnel in the public line network (Internet, etc.), and establishes a PPP connection via the network to configure VPN. This protocol is the second layer (data link layer) of OSI basic reference model, and it can be used not only via IP network but also via various paths such as frame relay and ATM.
PPPoE (PPP over Ethernet)	This enables the use of PPP (needed for calls for phone and ISDN lines) in "constant connection" environment such as LAN.

A new connection is established using the following procedures.

Fig. 3.35

Establishing a new connection

1. Specify name in **Type a name for the connection** field and select a type of connection and then click **Next >** button. See Fig. 3.39.

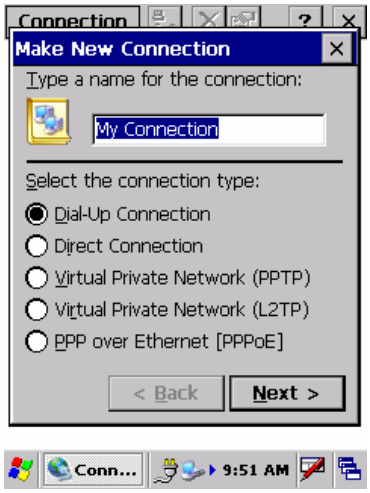


Fig. 3.36

Setting modem information

2. Set the modem information in the modem screen and then click **Next >** button.

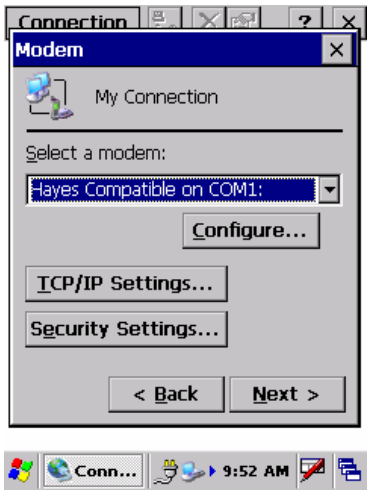


Fig. 3.37

Setting phone number

3. Set all information about a phone number and then click **Finish** button.

Fig. 3.38

3.1.14. Version Info

This applet is used to display each version number of the OS, boot section, loader and service pack integrated in the terminal.

Fig. 3.39

3.1.15. Vibrator

This applet is to set up vibrator settings.
Enable each checkbox in Fig. 3.43 (**Alarm, Warning, Scan, Wake on LAN, User**) to set up the vibrator function enabled for the selected events.

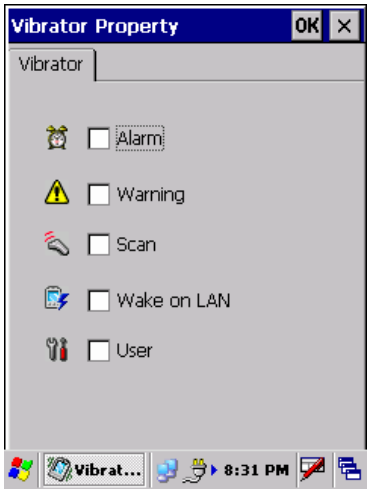


Fig. 3.40

3.1.16. Password

This applet is to set up a password that is used when the terminal starts up.

Fig. 3.41

Password

This field is for entering the password. Only numerals can be used for the password.

Confirm password

This field is for entering the same password again specified in **Password** field for confirmation purposes.

Enable password protection at power-on

Enable the checkbox if password input is required when the terminal starts up. The box and the parameter's name are grayed unless a password is entered in both **Password** and **Confirm password** fields.

3.1.17. Power

This applet is for setting the power management options.

Battery Tab

This tab displays the current status of battery pack (Operating battery) and memory backup battery (Backup battery).

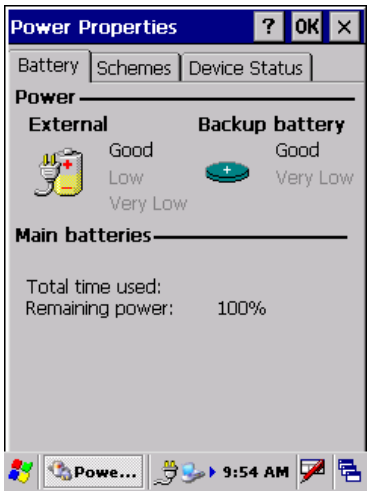


Fig. 3.42

Schemes Tab

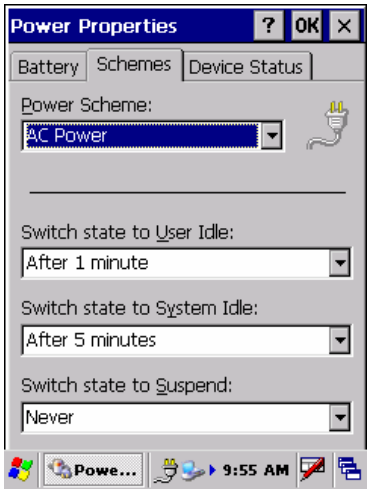


Fig. 3.43

Power Schemes

This pull-down menu is to select the power source from either “Battery Power” or “AC Power”.

Switch state to User Idle

This pull-down menu is to set up a time period until when the terminal changes its state to User idle.

Switch state to System idle

This pull-down menu is to set up a time period until when the terminal changes its state to System idle.

Switch state to Suspend

This pull-down menu is to set up a time period until when the terminal changes its state to Suspend. The selection will be disabled if the power source is set to “AC Power”.
A time period until when the Auto Power OFF function is performed will be a sum of adding time periods of **Switch state to User Idle**, **Switch state to System idle** and **Switch state to Suspend**. The minimum time period is 3 minutes.

Device Status Tab

This tab displays device power levels for the integrated devices.

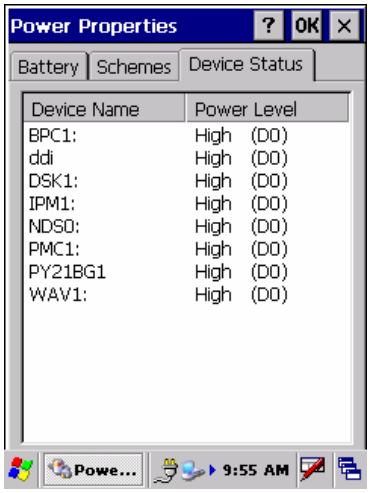


Fig. 3.44

3.1.18. Buzzer

This applet is to set up “Enable or Disable” for buzzer sound and its sound volume in one of the three grades (minimum, medium, or maximum) for each event listed in Fig. 3.48. Setting on the sound volume can be checked by clicking the triangle button for each event.

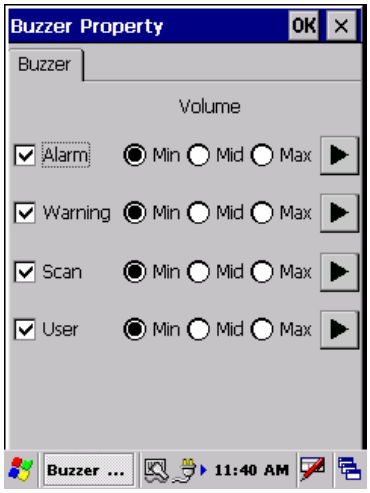


Fig. 3.45

3.1.19. Volume & Sounds

This applet is to set up “Enable or Disable” for sound types for each event listed in Fig. 3.49. Use the slide to adjust the sound volume for all the events.
Enable the checkbox of event you wish to set up the sound enabled. The radio buttons are to set up either “Soft” or “Loud” for the event sounds.

Volume Tab

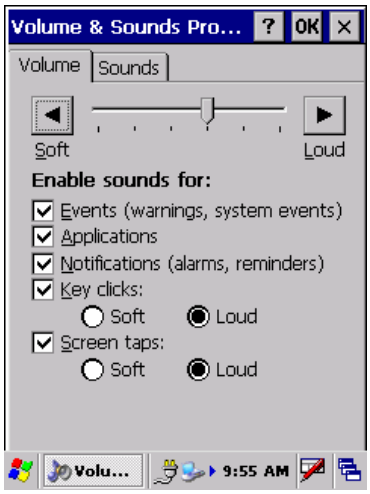


Fig. 3.46

Sounds Tab

This tab is for setting the sound file that the terminal uses.

Fig. 3.47

3.1.20. Mouse

Double click the grid in the right side of the upper screen to calibrate the double click speed and its interval. The set value can be checked by double clicking the icon in the right side of the lower screen. See Fig. 3.51.

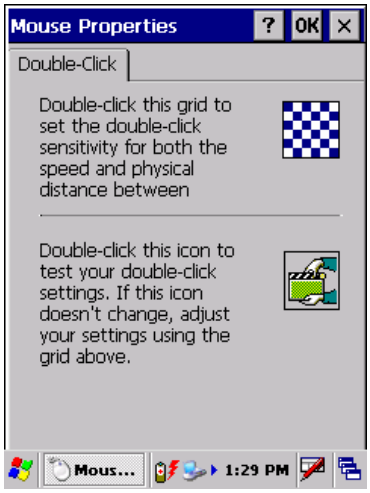

Mouse Properties
OK
Double-Click
Double-click this grid to set the double-click sensitivity for both the speed and physical distance between
Double-click this icon to test your double-click settings. If this icon doesn't change, adjust your settings using the grid above.
Mous...
1:29 PM

Fig. 3.48

3.1.21. Scanner Setting

This applet is to change the settings for the integrated laser scanner. For detail about each parameter, refer to Chapter 2.2 “Scanner”.

Read barcode Tab

This tab is for specifying bar code symbologies to scan. Multiple symbologies can be specified.

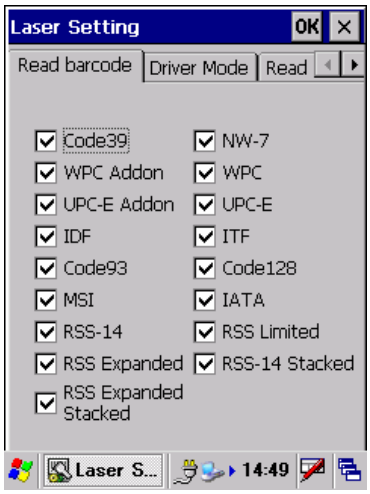


Fig. 3.49

Driver Mode Tab

This tab is to set up “Enable or Disable” for scanning each symbology of the symbologies listed in **Laser Setting** tab and its parameters listed below.

- Min (No. of read digits)
- Max (No. of read digits)
- Output format
- Check-digit
- Check-digit output

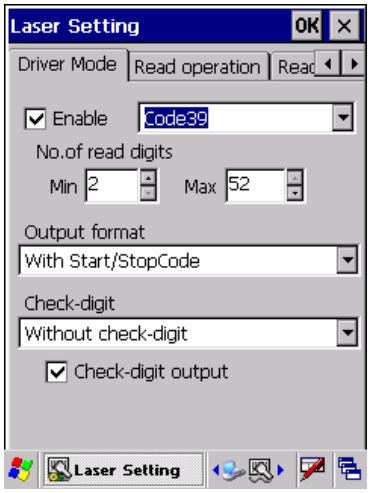


Fig. 3.50

Read operation, Read operation 2 Tabs

These tabs are to set up the following parameters related to scanning the bar code symbologies. Select a mode you wish to set up in each pull-down menu.

- Scanning mode
- Laser beam swing angle mode
- Laser focus
- Output buffer
- Termination code
- Decode level
- Scanning method
- Filter
- Verification
- Scanning
- Timeout
- Filter start time
- Gain
- Learning Decode

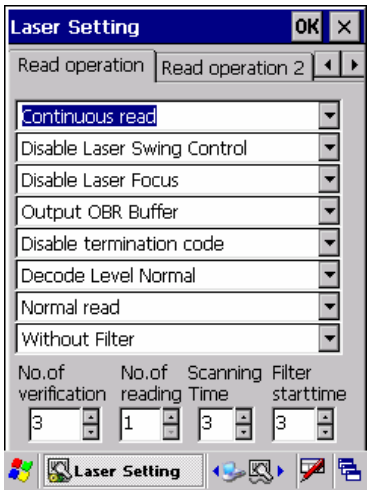


Fig. 3.51

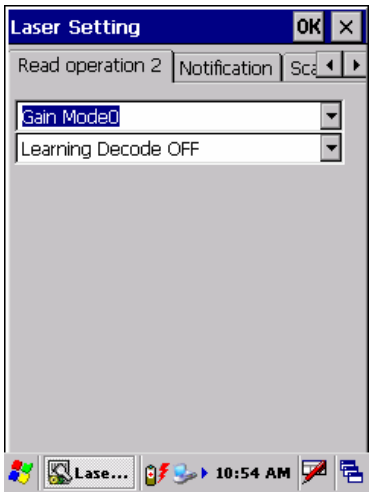


Fig. 3.52

Notification Tab

This tab is to set up notification methods selecting from the listed methods below. The notification is issued when scanning a bar code is complete.

- LED light up
- Buzzer sound
- Vibration

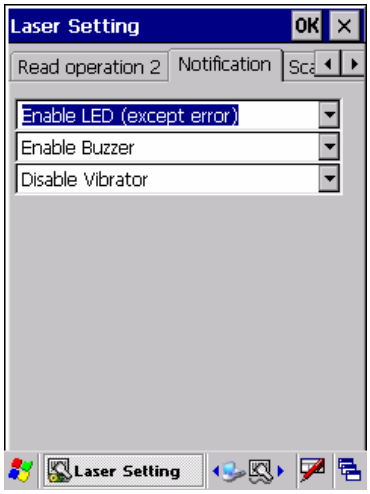


Fig. 3.53

Scanning Key Tab

This tab is to set up “Enable/Disable” for each key of the keys listed below as the scan trigger key.

- Left Trigger
- Right Trigger
- [L] Key
- [R] Key
- [U] Key
- [D] Key
- Center Trigger
- Gun Grip Key (Trigger Grip’s lever)

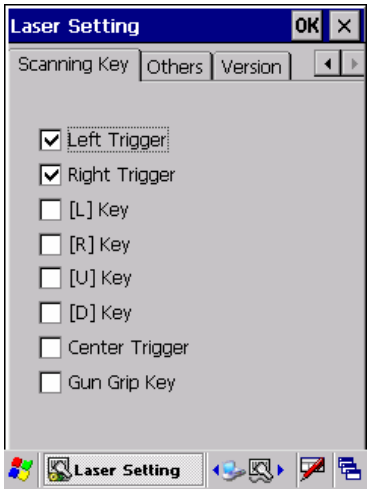


Fig. 3.54

Others Tab

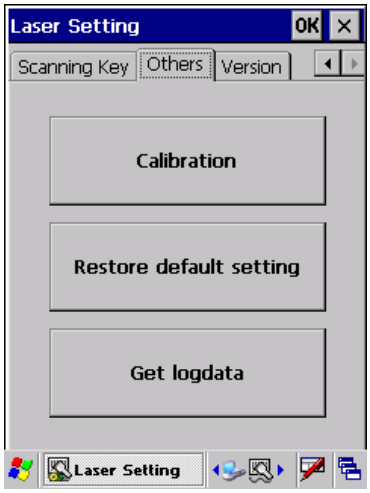


Fig. 3.55

Calibration Button

This button displays the OBR calibration screen to set up the calibration of laser beam swing angle. Follow the guidance appeared on the screen to complete the calibration.

Restore default setting Button

This button resets setting contents and restores all the settings to the default settings.

Get logdata Button

This button captures log information for both the scanner and decoder units. The following are the log file names.

Scanner unit: "\ObrLog.dat"

Decoder unit: "\DecodeLog.dat"

Version Tab

This tab displays version information for the laser scanner setting tool.

Fig. 3.56

3.1.22. Display

This applet is for setting color scheme for the background and desktop (appearance).

Background Tab

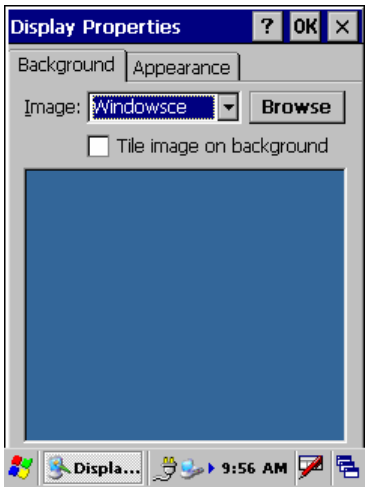


Fig. 3.57

Image

Select an image to be displayed in the ground in this pull-down menu.

Browse Button

This button displays the file reference dialog screen to specify an image to be displayed in the background. In the dialog screen, specify a file name in **Name** field and its file format in **Type** field.

Tile image on background

Set the checkbox enabled to display the specified tile image in **Image** field on the background.

Appearance Tab

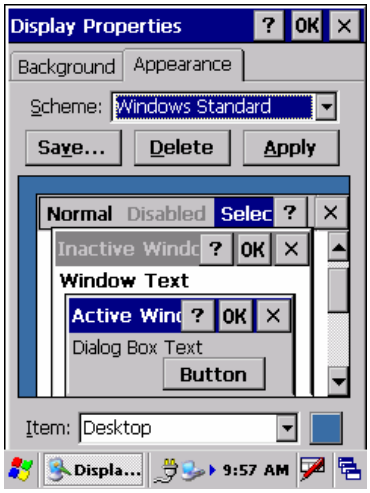


Fig. 3.58

Scheme

This pull-down menu is for selecting a color scheme of the desktop.

Save.... Button

This button saves the specified color scheme. After pressing the button, a dialogue window to confirm the specified color scheme appears. Press **OK** button to save it.

Delete Button

This button deletes the specified color scheme in **Scheme** field.

Apply Button

This button applies the specified color scheme immediately.

3.1.23. Storage Manager

This applet displays the FlashDisk information.

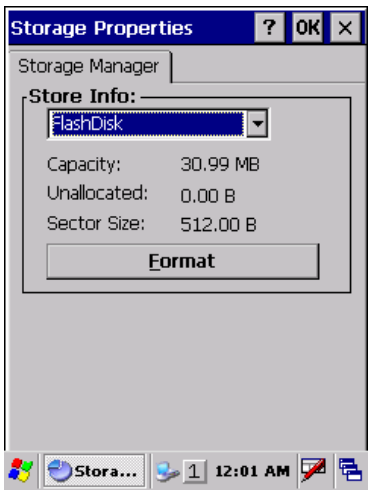


Fig. 3.59

3.1.24. Owner

This applet is for setting information related to the owner.

Identification Tab

Fig. 3.60

Name

This field is for specifying the owner's name inputting alphabets from the Input Panel appeared at the lower part on the screen.

Company

This field is for specifying company name of the owner.

Address

This field is for specifying address.

Work phone

This field is for specifying a phone number at work.

Home phone

This field is for specifying a phone number at home.

Display owner identification

Set the checkbox enabled to display the owner information when the terminal starts up.

Notes Tab

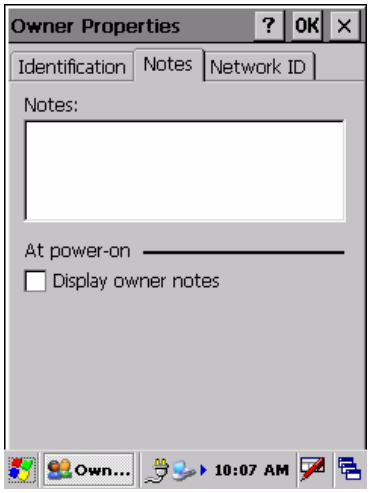


Fig. 3.61

Notes

Using this field, a memo can be freely written.

Display owner notes

Set the checkbox enabled to display the note written in **Notes** field when the terminal starts up.

Network ID Tab

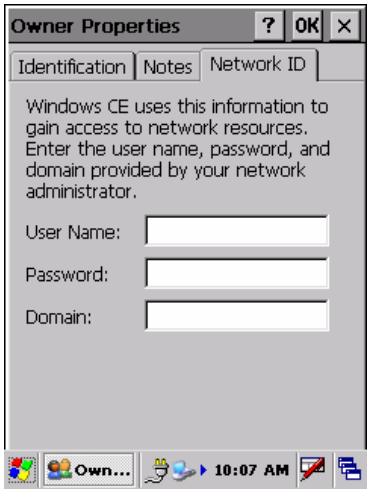


Fig. 3.62

User Name

This field is for specifying a user name to be used when accessing to network source.

Password

This field is for specifying a password to be used when accessing to network source.

Domain

This field is for specifying a domain to be used when accessing to network source.

3.1.25. Certificates

This applet is used for editing certificates trusted by the user.
Select certificate type from either **Trusted Authorities**, **My Certificates**, or **Other Authorities** in the pull-down menu.

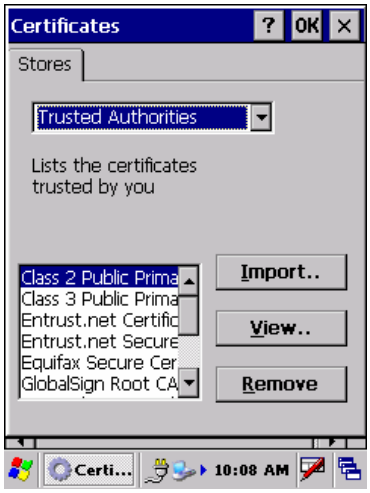


Fig. 3.63

Import... Button

This button displays the import certificate or key screen to enable import of certificate or key.

View... Button

This button displays the properties of certificate or key.

Remove Button

This button removes certificate or key.

3.1.26. Regional Settings

This applet is for setting display method and format of region, numeric value, currency, date, and time.

Region Tab

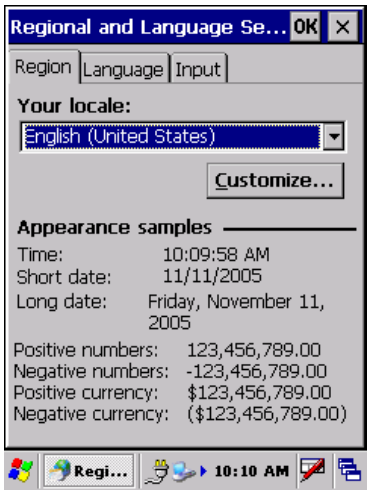


Fig. 3.64

Your local

This pull-down menu is to select your local region.

Customize… Button

This button displays the number tab to enable various regional settings such as number, currency, date and time.

Language Tab

This tab displays language for locale selected in **Region** tab. The language field in this tab is grayed.

Fig. 3.65

Input Tab

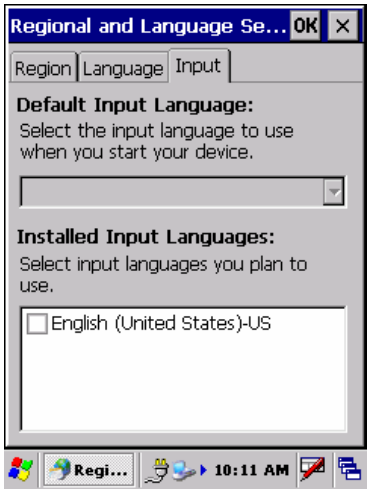


Fig. 3.66

Set the checkbox enabled in **Installed Input Languages** field for prescribed language to make selection.

3.1.27. Date and Time

This applet is for setting date, time and time zone. Input of password may be requested if it has been set with the password tool.

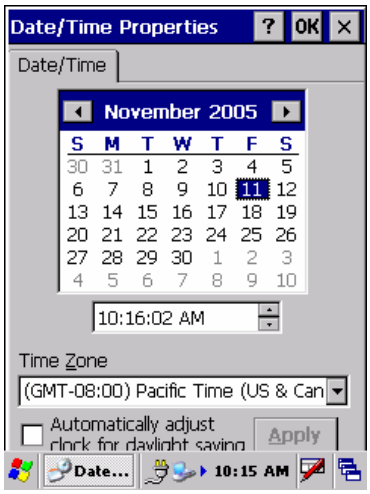


Fig. 3.67

Apply Button

This button applies all the settings made in this tab.

3.1.28. Input Panel

This applet is for changing the current input method and options.

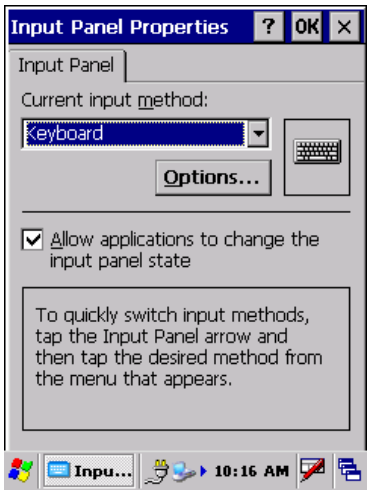

Input Panel Properties
?
OK
Input Panel
Current input method:
Keyboard
Options...
Allow applications to change the input panel state
To quickly switch input methods, tap the Input Panel arrow and then tap the desired method from the menu that appears.
Inpu...
10:16 AM

Fig. 3.68

Current input method

This pull-down menu is to select an input method.
The input method selected in this pull-down menu will become the default for the input panel.

Options... Button

This button displays the soft keyboard options screen for the input method selected in **Current input method** pull-down menu.

Allow applications to change the input panel state

Set the checkbox enabled to allow changes of input panel state in applications.

3.1.29. Brightness

This applet is for setting brightness for the power source provided by either battery or external power source, the backlight auto dimming, and the backlight auto off.

Brightness (Battery) Tab

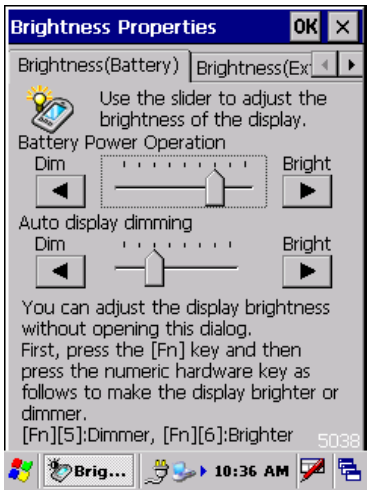


Fig. 3.69

Battery Power Operation

This slide is for specifying brightness in one of nine grades while battery pack is being used as the power source.

Auto display dimming

This slide is for specifying brightness in one of eight grades when the auto brightness dimming mode starts up. This auto brightness dimming mode is operable only during battery pack is used as the power source.

Brightness (External) Tab

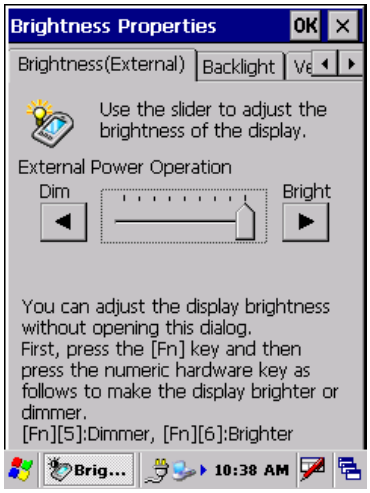

Brightness Properties
OK
Brightness(External)
Backlight
Use the slider to adjust the brightness of the display.
External Power Operation
Dim
Bright
You can adjust the display brightness without opening this dialog.
First, press the [Fn] key and then press the numeric hardware key as follows to make the display brighter or dimmer.
[Fn][5]:Dimmer, [Fn][6]:Brighter
Brig...
10:38 AM

Fig. 3.70

External Power Operation

This slide is for specifying brightness in one of nine grades while an external power supply is used as the power source.

Backlight Tab

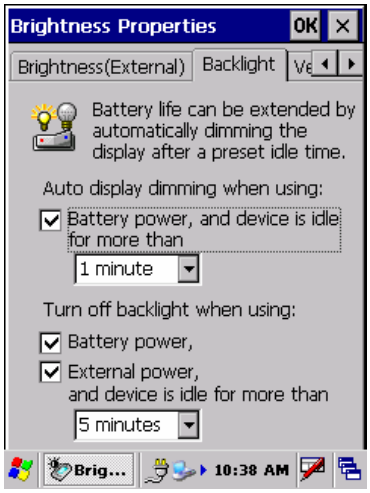

Brightness Properties
OK
Brightness(External)
Backlight
Battery life can be extended by automatically dimming the display after a preset idle time.
Auto display dimming when using:
Battery power, and device is idle for more than
1 minute
Turn off backlight when using:
Battery power,
External power, and device is idle for more than
5 minutes
Brig...
10:38 AM

Fig. 3.71

Auto display dimming when using

This parameter is for specifying “Enable/Disable” for the backlight auto dimming mode as well as a time period until when the auto dimming mode starts up. This setting is valid only when the power source is provided by battery pack.

Turn off backlight when using

The parameters are for specifying “Enable/Disable” for backlight auto off as well as a time period until when the backlight auto off mode starts up.

Note:
When both backlight auto dimming and the backlight auto off modes are set enabled, either one with shorter time period specified than the other will have the priority.

Version Tab

This tab displays the information about the Brightness Properties.

Fig. 3.72

3.2. Application Programs

Once application program is launched by accessing **Start** → **Programs** menus, the application's operation menu is displayed to enable the processing.
The following are the application programs implemented in the terminal

Table 3.4

Application	Description	CASIO	MS
Internet Explorer	Displays Web pages for Internet and Intranet.	Yes	--
Text Editor	Rich text editor	--	Yes
Voice Recorder	Lists up and creates sound/hand writing note/static image.	Yes	--
Windows Explorer	File management program	--	Yes
Command Prompt	Operates the system with the DOS commands.	--	Yes
Remote Desktop Connection	Remote desktop client	--	Yes
Backup Tool	Backs up and restores user data to/from FlashDisk.	Yes	--
Laser Scanner Demo	Demonstrates the features of scanning bar codes.	Yes	--
Laser Scanner Read	Scans bar codes.	Yes	--
Copy Devices	Copies user data between two terminals.	Yes	--
FLCE	Client for data upload/download	Yes	--
ActiveSync	ActiveSync client	--	Yes
LAN ActiveSync	ActiveSync client via WLAN	--	Yes
Terminal	TTY/VT-100 emulator	--	Yes
NetSearch	Displays a list of partners via WLAN.	Yes	--

3.2.1. Internet Explorer

This application displays Web pages on the Internet and Intranet.

- The IE 6.0 for Windows CE module is integrated in the terminal.
- Kerberos, TLS Version 1.0, SSL Versions 2.0 and 3.0, and SGC are supported.
- JScipt 5.5 conforms to ECMA 262 language specification (ECMAScipt Edition 3).

Fig. 3.73

Table 3.5 Menus in the application

Menu	Description
Open	Display of HTML and JPEG files.
Save As …	Saves data in HTML, TEXT, GIF and BMP formats.
Edit	Edits text in a page.
Full Screen	Hides the main menu, toolbar, etc.
Fit to Screen	Changes the displayed page size to reduction mode.
Address Bar	Changes the address bar.
Text size	Specifies the displayed font size.
Encoding	Specifies the displayed font.
History …	Changes the display to a page listed in the history.
Find …	Searches text within page.
Options …	Sets up options for security, etc.
Properties	Displays the property of page.
Exit	Exits the browser.

Table 3.6 Toolbar Configuration

Function		Description
	Return	Returns to the previous.
	Advance	Changes the display to the previous page displayed prior to returning.
	Update	Updates the current page to the latest information.
	Homepage	Returns to the homepage.
	Favorites	Displays the Favorites menu.

3.2.2. TextEditor

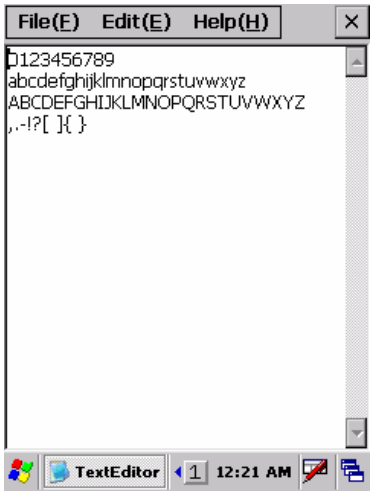


Fig. 3.74

Table 3.7 Menus in the application

Menu		Description
File		
	New	Creates new text.
	Open …	Displays existing document file.
	Save	Saves document file by overwritten.
	Save As …	Saves document file with a specified name.
	Recent Files	Displays recently displayed document file names.
	Close	Ends the application.
Edit		
	Undo	Restores the previous operation.
	Cut	Cuts document in the selected range.
	Copy	Copies document in the selected range.
	Paste	Pastes document specified for cut or copy.
Help		
	About TextEditor	Displays version information.

3.2.3. Explorer

This application is a file management program. It can copy, transfer and delete files, create folders and delete folders.

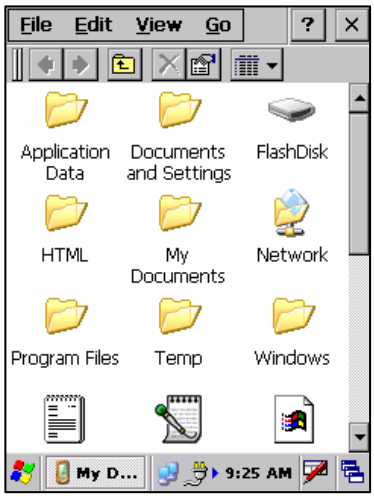


Fig. 3.75

Table 3.8 Menu in the application

Menu			Description
File			
	Open		Opens files and folders.
	New Folder		Creates new folders.
	Delete		Deletes specified file and folder.
	Rename		Changes specified file and folder names.
	Properties		Displays properties of specified file and folder.
	Send To		
		Desktop as Shortcut	Creates shortcut for specified file and folder on the desktop.
		My Documents	Copies selected file and folder to “My Documents”.
	Close		
Edit			
	Undo		Returns to the previous operation.
	Cut		Cuts selected file and folder.
	Copy		Copies selected file and folder.
	Paste		Pastes file and folder that are cut or copied.
	Paste Shortcut		Creates shortcuts for file and folder that are cut or copied.
	Select All		Selects all the files and folders that are displayed.
View			
	Large Icon		Displays with a large icon.
	Small Icon		Displays with a small icon.
	Details		Displays name, size, type and updated date/time.
	Arrange Icons		
		Name	Lines up icons in order of name.
		Type	Lines up icons in order of category.
		Size	Lines up icons in order of size.

Continue.

		Date	Lines up icons in order of date.
		Auto Arrange	Lines up icons in order of the method specified in "Arrange Icons".
	Refresh		Updates the list with latest information.
	Option …		Displays folder options screen.
	Address Bar		Switches between "Display" and "Hide" for the address bar,
	Status Bar		Switches between "Display" and "Hide" for the status bar.
Go			
	Favorites		
		Add To Favorites …	Registers URLs in Favorites folder.
		Organize Favorites …	Organizes files in Favorites folder.
	Back		Goes back to the previous screen.
	Forward		Goes to a next screen.
	My Documents		Opens My Documents folder.

3.2.4. Command Prompt

This application starts up the Pocket CMD to enable operating the terminal with the DOS commands.

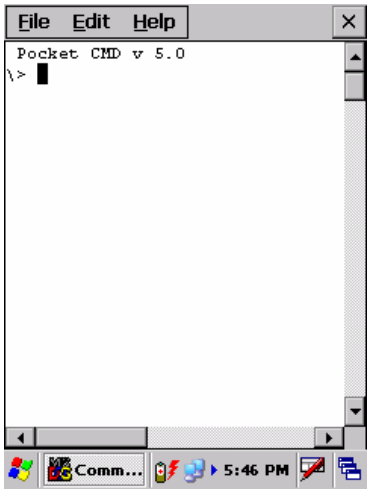


Fig. 3.76

Table 3.9 Menus in the application

Menu		Description
File		
	Close	Ends the application.
Edit		
	Copy	Copies text in selected range.
	Paste	Pastes text cut or copied.
	Clear Screen	Clears the screen.
	Set Screen Buffer …	Displays screen for setting the screen's buffer size.
Help		
	About Console …	Displays version information.

3.2.5. Remote Desktop Connection

This application is the RDP5.5 based remote desktop client. It can control a Windows PC remote from the terminal that is executing terminal service using the Microsoft remote disk top function. The following are the procedures.

1. Specify a Windows based PC remote from the terminal by inputting its computer name and IP address.

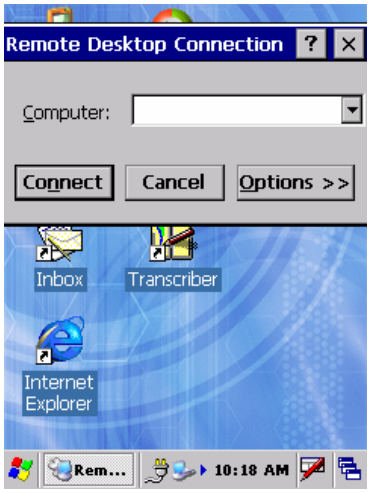


Fig. 3.77

2. Log in with the remote PC by inputting the remote user name and password. See Fig. 3.92.

Fig. 3.78

3. If the log in is complete successfully, the terminal's display shows the desktop of the remote PC.

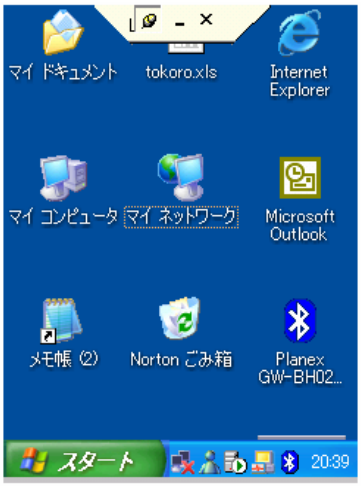


Fig. 3.79

3.2.6. Voice Recorder

This application records and playbacks voice sound.
Move the slide bar located lower portion in the screen (see Fig. 3.102) to any position to define a playback start up position.

Fig. 3.80

Table 3.10 Menus in the application

Menu			Description
Tool			
	Option		Sets recording/playing formats
		Voice Recorder	Sets up voice recorder settings.
		Other	Sets up display and other settings.
View			
	Slide Show display		
	About		Displays version information.

Table 3.11 Toolbar Configuration

Button		Description
	Record	Records voice sound.
	Stop	Stops recording/playback.
	Play	Playbacks recorded voice sound.
	Rewind/Fast Forward	Rewinds or forward the playback position.
	Volume	Changes playback sound volume.

3.2.7. Laser Scanner Demo

This application demonstrates the following scanning functions.

- Automatic permission of setting readable bar code symbologies
- Scanning bar codes using the Trigger key.
- Displaying scanning results.

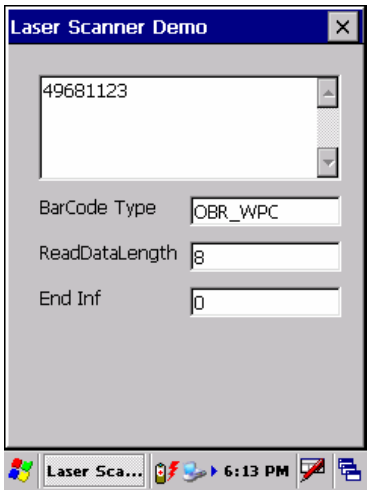


Fig. 3.81

3.2.8. Laser Scanner Read

After scanning a bar code by the integrated laser scanner, a result of the scanning is output.
The output method for the scanning result will be defined by the settings made in “Laser Setting”.

Operation Procedures

1. Start up laser scanning. The ( ) icon appeared in the taskbar indicates that the scanning application is being started up.
2. Start up an application that receives a result of scanning bar code.
3. Scanning a bar code will take place when the Trigger key is pressed.
4. The scanning will end when the Trigger key is released or when the preset time elapses. The scanning result will be output to the application.

Notes:

- To exit the laser scanning application, click the icon in the taskbar and then select Exit menu.
- The clipboard output method copies data of scanning bar code into the clipboard by pasting it (by executing the keyboard event (Ctrl and v keys)). Therefore, data of scanning cannot be output to application that does not support the past operation (the keyboard event (Ctrl and v keys)).
- The laser scanning application cannot run simultaneously with other application that occupies the integrated laser scanner.

3.2.9. Copy Devices

This application copies various settings and applications installed in one terminal (master terminal) to other multiple terminals (child terminals).

Contents to be copied

Table 3.12

Target	Contents	Remarks
RAM Disk	All files in the RAM.	
FlashDisk	All files in the FlashDisk.	
Registry	Select from "All", "User" and "Display".	Calibration data and OS build information are excluded.
Database	Inbox mail info, etc.	
Date/Time	Date/time set on the master terminal.	Time difference of a several seconds may occur depending on the surrounding communication condition.

Note:
Each target (in the table above) can also be specified for copying its content to other terminals.

Procedures for copying between terminals

The following is the procedure for copying data between terminals.

On the mater terminal

1. Enable each checkbox in Fig. 3.117 you wish to copy its content to other terminals, and then click **Send Start** button.

Fig. 3.82

2. The following screen will appear.

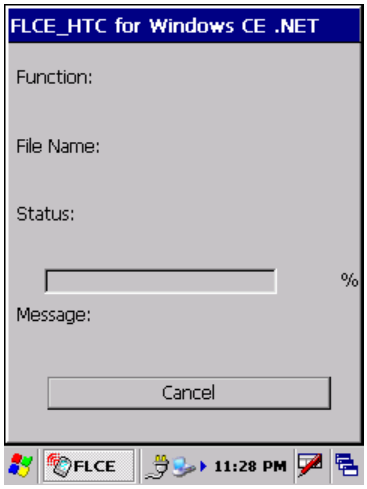


Fig. 3.83

On child terminals

1. Click **Receive Start** button on each child terminal (if multiple terminals exist). See Fig. 3.119.

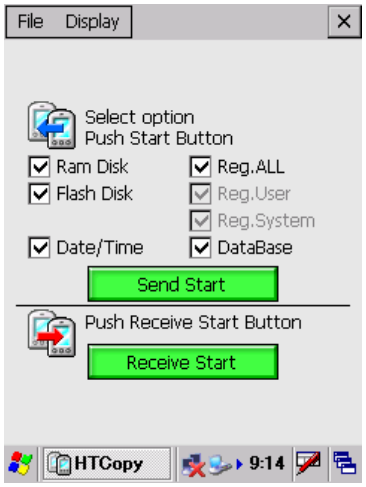


Fig. 3.84

2. On the child terminal side, the following screen will appear indicating the reception of data.

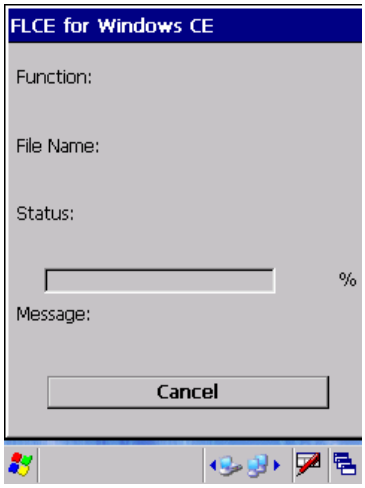


Fig. 3.85

3.2.10. FLCE

This application enables the terminal to communicate with a PC with the Upload/Download utility being running. The communication is established via cradle.

Input Command Line Screen

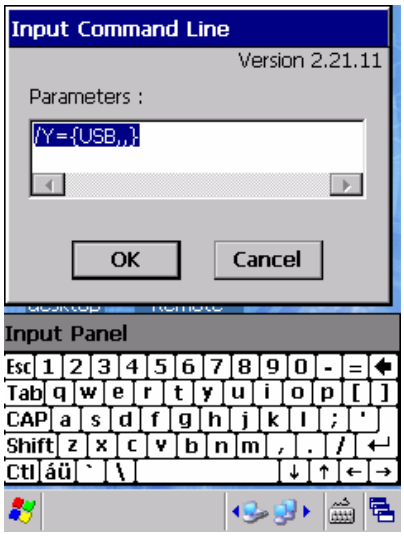


Fig. 3.86

Screen During Transfer

While the communication continues, the following screen will appear. Refer to Upload/Download Manual available separately for detail of the operations.

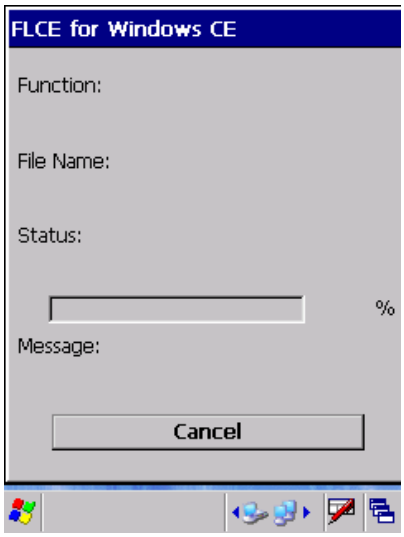


Fig. 3.87

3.2.11. ActiveSync

This application is ActiveSync client program for communicating with a PC.

3.2.12. LAN ActiveSync

This application is ActiveSync client program that uses WLAN.

3.2.13. Terminal

This application is TTY and VT-100 terminal emulator. It is used for on-line service or communication with business server that requires the TTY terminal emulation or the VT-100 terminal simulation.

Double click **Make New Session** icon to create new session. See Fig. 3.123.

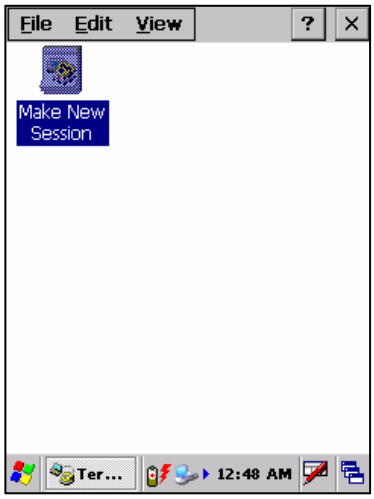


Fig. 3.88

Communications Tab

Set session name, modem and phone number in each field in Fig. 3.124.

Fig. 3.89

Emulation Tab

Set emulation type, code page and display settings in each field and checkbox in Fig. 3.125.

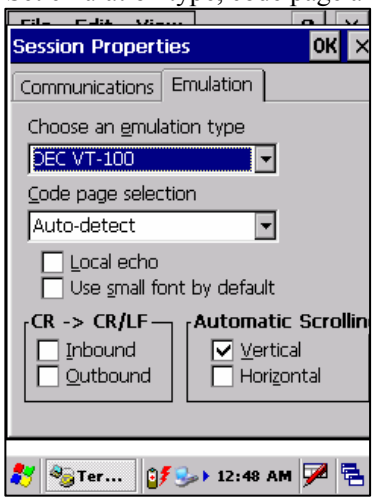


Fig. 3.90

3.2.14. NetSearch

This application displays a list of partner stations communicable with the terminal via WLAN.

- Partner stations on the list can be sorted in the order of field intensity, station name and channel.
- Field intensity for the partner station currently being established with the terminal will be displayed in green.
- The information appeared in the screen is updated every five seconds.
- The remote station's WLAN standard IEEE802.11b or IEEE802.11g icon is displayed at the head of the station name.
- A key symbol icon is displayed for stations that use encrypted communication.

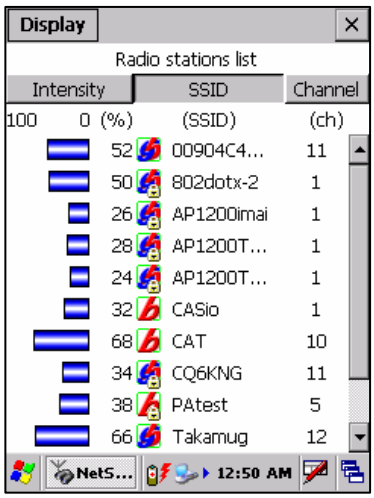


Fig. 3.91

Table 3.13 Menus in the application

Menu		Description
Display		
	List	Displays a list of partner stations.
	Detail	Displays screen showing information in detail about the partner station.
	Options	Displays a screen for setting partner station parameters for searching.
	About	Displays version information.

Detail Information About Partner Station

The screen displays following details about the partner station.

- SSID
- WLAN standard
- No. of channels
- Intensity
- Encryption
- MAC address
- Status
- IP address
- Physical

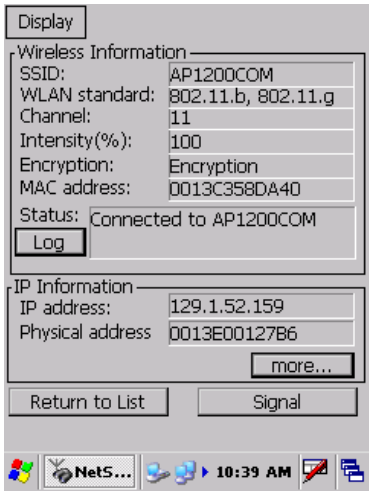


Fig. 3.92

Click **Log** button (see Fig. 3.92) to display the detailed log of connections established.

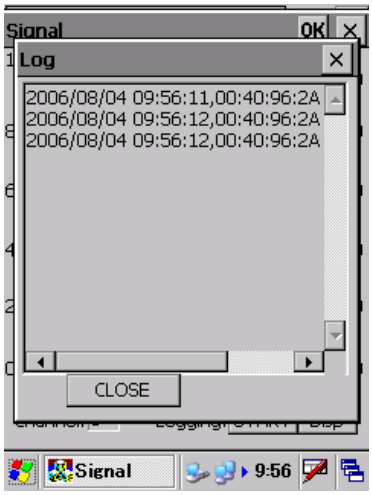


Fig. 3.93

Or, click **more ...** button (see Fig. 3.92) to display the log of IP in detail.

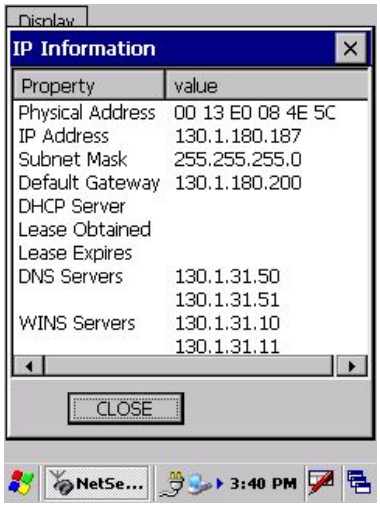


Fig. 3.94

Or, click **Signal** button (see Fig. 3.92) to display the signal strength in dBm and with a yellow straight line that also indicates the signal strength in percent for the operator to judge if the signal in air is ample enough to continue the WLAN operation.

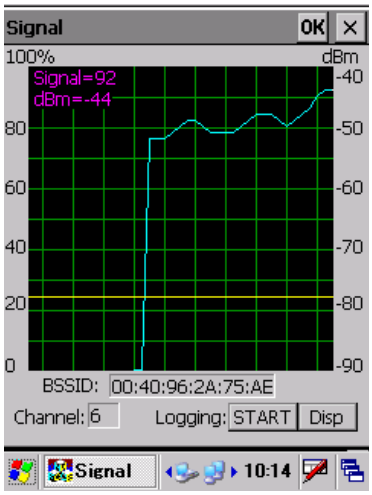


Fig. 3.95

Clicking **Return to List** button switches the screen to Fig 3.92.

Partner Station Search Conditions Setting Screen

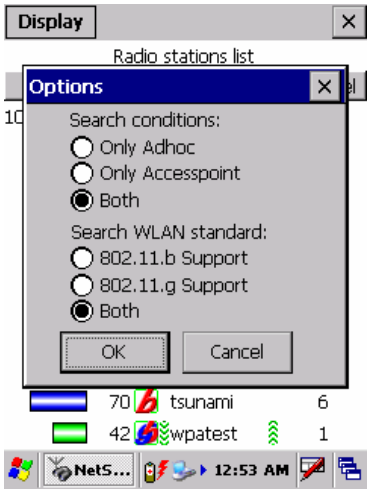


Fig. 3.96

Search conditions

Select a partner station to be searched via a way of either **Only AdHoc**, **Only Accesspoint** or **Both**.

Search WLAN Standard

Select a partner station to be searched via a WLAN standard either **802.11.b Support** (IEEE802.11b standard), **802.11.g** (IEEE802.11g standard) **Support** or **Both**.

3.3. Utilities

The utilities listed in the table below are mainly used as a co-process or auxiliary program in user applications.

Table 3.14

Utility	Description	CASIO	MS
FCHKCE	Confirms a result of data upload/download.	Yes	--
Auto Setup	Executes automatically application at time of reset on the terminal.	Yes	--
Auto Recovery Tool	Performs automatic recovery at a time of full reset on the terminal.	Yes	--
Welcome Wizard	Sets up date/time and owner information.	Yes	--
Input Panel (SIP)	Software keyboard.	--	Yes

MS; Microsoft

3.3.1. FCHKCE

This utility checks a result of data upload/download. See “Upload/Download Manual” for its details.

3.3.2. Auto Setup

This utility automatically sets up a specified application.

Execution Timing

The timing for executing “Auto Setup” is as follows.

- When the terminal is reset;
  The utility executes **Setup.exe**, **Restore.exe** in FlashDisk or in the card directory.
- When SD card or CF card is loaded;
  The utility executes **AutoRun.exe** in the card directory.

Location of Application for Auto Setup

Locations of applications to be automatically set up by this utility are as follows.

- FlashDisk
- SD card
- CF card

The locations are in each **CE\ARM** folder of the locations.

Customizing in the Registry

Performances of the "Auto Setup" can be automatically customized by changing the parameters in the following registry.
[HKEY_LOCAL_MACHINE\Drivers\CASIO\UTIL]

Table 3.15

Key	Setting Value	Description
AUTORUN	sz:"1"	Executes **AutoRun.exe** when an SD card is loaded.
	sz:"2"	Executes **AutoRun.exe** when a memory card is loaded
SETUP	sz:"1"	Executes **Setup.exe** for the memory card at a time of reset on the terminal.
	sz:"2"	Executes **Restore.exe** for the memory card at a time of reset on the terminal.
	sz:"3"	Executes **Restore.exe** for the SD card at a time of reset on the terminal.
	sz:"4"	Executes **Setup.exe** for the SD card at a time of reset on the terminal.
FLSETUP	sz:"1"	Executes **Setup.exe** for the FlashDisk at a time of reset on the terminal.
	sz:"2"	Executes **Restore.exe** for the FlashDisk at a time of reset on the terminal.

Notes:

- Once the registry is deleted, the applicable application will not be automatically started up.
- The registry will be initialized to its factory setting by performing a full reset on the terminal.
- Since automatic startup of applications by the utility will be performed every time when a reset is performed on the terminal and when a card is loaded, it should be avoided by controlling the automatic startup for each applicable application.

3.3.3. Auto Recovery Tool

This utility uses the backup tool to back up system data, restore system data and automatically execute user designated applications.
For data backup, data will be backed up by the backup tool. For data restoration, data will be restored by automatically executing the backup tool at a time of the terminal's start up after a full reset has been performed.

Backup

The following is the backup procedure.

1. Starts up \Windows\Restore.exe.
2. When the program is complete, an end message appears. Click **OK** button to close the program.

Restore

The following is the restore procedure.

3. **\FlashDisk\CE\ARM\restore.exe** will be started up after about 10 seconds when the welcome screen appeared by a full reset on the terminal. The screen will automatically close.
4. If **\FlashDisk\Calibrate.dat** does not exist, a screen for setting the calibration's parameters will appear.
5. A screen for setting date and time will automatically appear. Set the correct date and time.
6. Data will be automatically restored from the backup data.
7. The terminal will be automatically reset after about 5 seconds when the restoration of data in the step 4 is complete.

Execution Log

Execution log of the Auto recovery is stored in **\FlashDisk\CE\ARM\Restore.log**.

Notes:

- The execution log file can maintain a maximum of 30 logs combined for the backup and restore operations.
- If the log file exceeds over 30 logs, records older than others in the file will be deleted.

Skipping Restore

When the auto restoration about takes place, pressing 5 key on the terminal will output a warning sound and skips the imminent restoration process.

Error Conditions

The following are the conditions under which an error occurs when the auto restore is taking place.

- The backup or restore operation is executed when the battery capacity is low.
- The backup operation is executed when the FlashDisk has insufficient capacity.
- The backup or restore operation is executed when the memory has insufficient capacity.

3.3.4. Welcome Wizard

The Welcome Wizard sets up the following. However, each of the settings can be skipped if necessary.

- Owner information
- Date and time

Notes:

- Setting date and time can be avoided by setting a password even if a full reset takes place on the terminal.
- Setting date and time must be performed when the RTC is cleared by a full reset on the terminal.

Customizing Startup Screen

An optional bitmap can be displayed as the Welcome Wizard startup screen. Save an optional bitmap file as **FirstDisp.bmp** in the "\FlashDisk" folder. The screen size of the file must be set in 240 x 320 dots.

3.3.5. Input Panel (SIP)

This utility is a software keyboard. It supports QVGA display mode.

3.4. Application

The following are applications used by host PC linked with the terminal.

Table 3.16

Application	Description	CASIO	MS
ActiveSync	Executes data link with the terminal.	--	Yes
LMWIN	Executes data upload/download.	Yes	--
FCHK	Checks and confirms a result data upload/download.	Yes	--

MS; Microsoft

3.4.1. ActiveSync

By linking with the ActiveSync client installed in the terminal, this utility makes communication with the terminal possible. It is available from the following site.
http://www.microsoft.com/downloads/details.aspx?FamilyID=7269173a-28bf-4cac-a682-58d3233efb4c&DisplayLang=en

3.4.2. LMWIN

This utility links with the FLCE tool installed in the terminal to perform data upload and download. It is an option available separately. See “Upload/Download Manual” for its details.

3.4.3. FCHK

This utility checks and confirms results of data upload/download. See “Upload/Download Manual” for its details.